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ABSTRACT

One of two competency-based horticulture curriculum guides developed by an Illinois project, this Floriculture guide provides the classroom teacher with specific tasks determined by state industry personnel to be necessary for entry-level job placement. It is intended for horticulture education at the senior high school and two year college level. For each task, a specific performance objective and evaluation is given along with additional teaching strategies, evaluations, and instructional references. Both students and teachers may refer to Performance Guides and/or Instructor Checklists to determine and judge execution of the tasks. The seven units in this guide are Propagating and Planting of Plants, Soil and Planting Media Preparation, Cultural and Environmental Control Practices, Irrigation Practices, Plant Pest and Disease Control, Harvesting Crops, and Maintenance and Repairs. A master reference list is appended. (YLB)

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COMPETENCY-BASED HORTICULTURE
FLORICULTURE

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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UNIT: PROPAGATING AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT SEEDS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a particular kind of flower seeds, flats or containers and growing medium, plant seeds. Seeds must be spaced and covered in accordance with requirements of a particular species.	1. view filmstrips/slides 2. read subject-matter units/bulletins 3. review seed catalogues, and seed packet for planting instructions 4. group discussion of broadcasting vs. row seeding 5. complete Performance Objective	1. notes 2. notes 3. notes 4. participation 5. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>Illinois</u> No 5010a "Growing Flowering Annuals" <u>Kentucky</u> No. NP-7 'Planting Seed' <u>New York</u> 01.0505-03 'Plant Propagation from Seed' <u>Texas</u> 'Propagating Horticulture Plants' <u>West Virginia</u> No. 03 'Seeds' <u>Wisconsin</u> No. 100 'Success with Bedding Plants' Seed Company Catalogues Seed Packet Instructions Local Industry Performance Guide

PERFORMANCE GUIDE

(Attached)

UNIT: PROPAGATION AND PLANTING OF PLANTS
WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT SEEDS

PERFORMANCE GUIDE

1. Identify the seeds to be planted.
2. Fill the containers with germination medium.
3. Spread media over seeds to cover them.
Caution: Do not cover seeds too deeply. Depth of covering will depend on size of seed, but in no case should it exceed 1/2 - 1 inch of firm evenly distributed media.
4. Correctly label all containers or flats.
5. Place flats in suitable area to germinate.
Caution: A moist, well lighted area of suitable temperature is generally best for germination, but some species have special requirements.
6. Keep medium in flats moist until seeds have germinated.
Caution: Mist system is preferable to hand watering.
7. Return unused materials to proper storage.
8. Clean the work area after use.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT BULBS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a previously prepared field area, treated bulbs, the required stakes, string tools, and equipment, plant the bulbs. Bulbs will be planted in straight lines, at the recommended space interval and depth.	1) Read subject matter unit 2) Review bulb catalogues for spacing and planting depths 3) Complete Performance Objective	1) Notes 2) Notes 3) Per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>Kentucky</u> No. NP-6 'Planting Bulbs' Bulb Catalogues Local Industry Performance Guide

PERFORMANCE GUIDE

(attached)

FLORICULTURE

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT BULBS

PERFORMANCE GUIDE

1. Identify field area selected for planting.
2. Use string and stakes to mark off spacings for rows.
3. Using a hoe or other preferred tool, cut furrow for planting the bulbs.
4. Place bulbs upright in furrow at spacing intervals and depth specified by the bulb grower.
5. Use garden hoe to cover the bulbs with soil and tamp lightly with blade of the hoe to firm the seedbed.
6. Clean tools and return them to storage.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? TAKE CUTTINGS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given pruning shears and/or knife, container, and plants from which cuttings are to be taken, take cuttings. Cuttings will be 3-5 inches in length depending on kind of plant taken at a node, free from disease, broken stems, and otherwise damaged.	1) View filmstrips/slides 2) Read subject matter units 3) Group discussion of various types of cuttings, importance of disease free stock, etc. 4) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>Illinois</u> No. 5006 'Producing Plants by Asexual Propagation' <u>Kentucky</u> No. NP-10 'Take Cuttings' <u>Michigan</u> 'Asexual Propagation of Plants' <u>New York</u> 01.0505-02 'Asexual Plant Propagation' <u>Texas</u> 'Propagating Horticulture Plants' <u>West Virginia</u> No. 04 'Rooting and Propagation'

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? TAKE CUTTINGS

PERFORMANCE GUIDE

1. Select healthy vigorous plants from which the cuttings are to be taken.
2. Use small pair of shears or a knife, if preferred, and collect cuttings in a suitable container.
Caution: Do not take cuttings from diseased, unhealthy, or new wood stock, be very careful not to damage the cuttings. Also, cuttings should be dampened, placed in cooler, depending on species, and then shipped or planted as soon as possible.
3. Clean and return all equipment to storage.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT CUTTINGS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given 100 fresh tip cutting fungicidal dip, rooting hormone, and prepared rooding beds or pots containing a rooting medium, stick the cuttings into the medium. Cuttings will be treated and inserted into the medium at a minimum depth of 1 inch with the medium around each cutting.	1. view filmstrips/slides 2. read subject-matter units 3. group discussion of various rooting hormones, & rooting medias 4. complete Performance Objective	1. notes 2. notes 3. participation 4. per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 5006 'Producing Plants by Asexual Propagation' <u>California</u> 'How to Root Plant Cutting' <u>Kentucky</u> No. NP-10 'Taking Cuttings' <u>Michigan</u> 'Asexual Propagation of Plants' <u>New York</u> 01.0505-02 'Asexual Plant Propagation' <u>Texas</u> 'Propagating Horticulture Plants' <u>West Virginia</u> No. 04 'Rooting and Propagation' Performance Guide

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLANT CUTTINGS

PERFORMANCE GUIDE

1. Treat cuttings with a fungicidal dip and rooting hormone by immersing the cut end into the dip.
2. Spacing the cuttings according to type requirements, insert cuttings into medium at a depth of approximately 1 inch.
3. Firm up the medium around each cutting to insure good contact with the soil.
4. Irrigate cuttings immediately after planting.
5. Clean up the area and return all equipment and materials to proper place.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? . LABEL PLANTS OR CUTTINGS

FLORICULTURE

PERFORMANCE OBJECTIVE

Given cuttings or plants in flats and the required labels, label the cuttings or plants, writing on all labels must be clear and legible and arranged so that the plants in question are in of and to the right of the labels.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

1. read subject-matter unit
2. complete Performance Objective

EVALUATION

1. notes
2. per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky
No. NP-15 'Labeling
Planted Specimens'

Performance Guide

UNIT: PROPAGATION AND PLANTING PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? LABEL PLANTS OR CUTTINGS

PERFORMANCE GUIDE

1. Print labels legibly, with waterproof marker, indicating the relevant information for a particular species.
2. Follow a systematic procedure, inserting each label so that the plants it represents are in back of and to its right.
3. Double check all labels to assure correct placement.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? SET TIME CLOCKS FOR AUTOMATIC MIST PROPAGATION SYSTEM

FLORICULTURE

PERFORMANCE OBJECTIVE

Given a mist propagation system and five different time interval settings for the time clocks, set the clocks to activate the system in accordance with the prescribed times. The system must function accurately with no more than 10 percent variation from the prescribed time intervals.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

1. review manufacturer's instructions
2. group discussion of time clock settings, mist intervals
3. complete Performance Objective

EVALUATION

1. notes
2. participation
3. per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list
Manufacturer's Instruction
Performance Guide

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SET TIME CLOCKS FOR AUTOMATIC MIST PROPAGATION SYSTEM

PERFORMANCE GUIDE

1. Identify the five desired time settings.
2. Locate the time clocks.
3. Move the 'on' indicator on the 24 hours clock to the time desired for starting the misting cycles and the 'off' indicator to the time when the misting is to stop.
4. Set trippers on the short interval time clock to obtain the intervals desired misting schedule.
5. Check the system with a watch, making adjustments in the settings as required.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? REMOVE ROOTED CUTTINGS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a rooting bed or flat filled with rooted tip cuttings, remove 25 of the rooted cuttings by hand without causing unnecessary damage to the roots or to the foliage.	1. view filmstrips/slides 2. read subject-matter units 3. complete Performance Objective	1. notes 2. notes 3. per Performance Guide and instructor approval	Selections from "Misc." Resource List <u>Illinois</u> No. 5006 'Producing Plants by Asexual Propagation' <u>California</u> 'Propagating Ornamental Plants' <u>Kentucky</u> No. NP-10 'Taking Cuttings' <u>Michigan</u> 'Asexual Propagation of Plants' <u>New York</u> 01.0505-02 'Asexual Plant Propagation' <u>Texas</u> 'Propagating Horticulture Plants' <u>West Virginia</u> No. 04 'Rooting and Propagation' Performance Guide

PERFORMANCE
GUIDE

(Attached)

FLORICULTURE

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REMOVE ROOTED CUTTINGS

PERFORMANCE GUIDE

1. Remove cuttings without damaging them by inserting the hand under the rooted cuttings and lifting them out of the bed or flat in which they have been rooted.
2. Place cuttings in container large enough to prevent damage to the plant and in which the cuttings can be kept moist.
3. Store cuttings at appropriate temperature.
4. Clean work area.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? TRANSPLANT SEEDLINGS OR CUTTINGS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given seedlings, dibble, the desired spacing intervals, growing medium, and appropriate sterile containers, transplant seedlings or cuttings. Cuttings must be handled with care and transplanted in the sterile containers in such a way that the survival rate will be at least 98 percent.	1. view filmstrips/slides 2. read subject-matter units 3. complete Performance Objective	1. notes 2. notes 3. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>California</u> 'How to Transplant Seedlings into Flats' 'How to Transplant Seedling from Flats into Pots' <u>Kentucky</u> No. NP-8 'Transplanting Seedlings to Pots' <u>West Virginia</u> No. 06 'Transplanting' Local Industry Performance Guide

PERFORMANCE
GUIDE

(Attached)

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? TRANSPLANT SEEDLINGS OR CUTTINGS

PERFORMANCE GUIDE

1. Identify the cuttings or seedlings to be transplanted.
2. Fill the sterile containers with medium.
3. Using a dibble, make holes in the medium into which the seedlings or cuttings are to be transplanted.
4. Transplant the seedlings or cuttings, making sure that there is good contact between the roots and stems with the planting medium.

Caution: Seedlings or cuttings should not be transplanted at too great a depth, they should be placed at the same depth they were initially growing.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PACKAGE CUTTINGS FOR SHIPMENT

FLORICULTURE

PERFORMANCE OBJECTIVE

Given floral and/or foliage cuttings, plastic sleeves and waxed paper boxes or other containers, package the cutting for shipment. The number of cuttings in each bunch must not be short of a specified number, exceeding it no more frequently than 15 percent of the time.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

1. read subject-matter unit
2. independent/group research of local industry practices
3. complete Performance Objective

EVALUATION

1. notes
2. notes/report findings
3. per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky
No. NP-68 'Packaging and Loading Orders'

Local Industry

Performance Guide

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PACKAGE CUTTINGS FOR SHIPMENT

PERFORMANCE GUIDE

1. Identify cutting to be packaged.
2. Verify the number of cuttings per bunch and the total number per box.
3. Select uniform cuttings of good quality and role each bunch in waxed paper or place them in a plastic sleeve.
4. Place the bunches in a packing box.
5. Fill in excess space with newspaper or other suitable packing materials to prevent cuttings from shifting about in packages.
6. Close the container and seal.

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REGULATE TEMPERATURE OF COLD STORAGE UNIT

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a cold storage unit equipped with thermostatic controls and a specified temperature at which the unit is to be operated, set the thermostat to maintain the specified temperature. Temperature in the unit when regulated must not vary $\pm 2^{\circ}$ F from the desired temperature.	1. read subject-matter units 2. review manufacturer's instructions 3. complete Performance Objective	1. notes 2. notes 3. per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> No. NP-27 'Setting and Adjusting Thermostats' Manufacturer's Instruction Performance Guide

FLORICULTURE

PERFORMANCE GUIDE
(attached)

UNIT: PROPAGATION AND PLANTING OF PLANTS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REGULATE TEMPERATURE OF COLD STORAGE UNIT

PERFORMANCE GUIDE

1. Operate the unit to make sure it is working.
2. Calibrate thermostat with the thermometer.
 - a. Check the thermostat reading with the temperature reading on the thermometer.
 - b. Adjust the thermostat, if necessary.
3. Set controls to temperature specified.
4. Using maximum - minimum thermometer, operate system and make necessary adjustments to insure desired temperature.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? TAKE SOIL SAMPLES

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a planting bed or other field areas, a spade, soil auger, and paper bags or other suitable container take soil samples. Two samples must be taken and each must comprise approximately one pint of soil. Samples must be representative of the area and be a composite of soil taken from not less than 10 different holes and from a grid covering only one soil type.	1. view filmstrips/slides. 2. read subject-matter units/bulletins. 3. independent/group research of soil sampling techniques recommended by Co-operative Extension Service Office. 4. Complete Performance Objective	1. notes 2. notes 3. notes/report findings 4. per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>Illinois</u> No. 4001 'Collecting and Preparing Soil Samples for Testing' <u>California</u> 'How to Collect and Test Soil Samples' <u>Kentucky</u> No. GG-1 'Taking Soil Samples' <u>Michigan</u> 'Sampling Soils' Local Industry Co-operative Extension Service Office Performance Guide

PERFORMANCE GUIDE

(attached)

FLORICULTURE

UNIT: SOILS AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? TAKE SOIL SAMPLES

PERFORMANCE GUIDE

1. Identify the general area as well as the spot locations on a sketch map or grid from which the composite sample is to be collected.
2. Collect soil to a depth of 6 inches from 10 or more locations as identified on the grid.
3. Mix the soil taken from all locations together, combining it into a single 1 pint sample.
4. Air dry the soil sample.
5. Label the sample with care for laboratory testing, making sure that the area from which it came is identified.
6. Clean all tools and equipment used and store.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? ANALYZE SOIL SAMPLES TO DETERMINE pH LEVELS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given three equivalent soil samples, an electric pH meter and a manual of instructions, determine the soil pH for each of the three samples. Readings on the three samples tested must agree $\pm$ 0.1 pH unit.	1. view filmstrips/slides 2. read subject-matter units 3. group discussion and use of other pH testing methods. 4. group discussion of soil pH importance and effect on plant growth. 5. complete Performance Objective	1. notes 2. notes 3. participation/test results 4. participation 5. per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 4002 a 'pH Test for Soil Acidity' No. 4005 'Nature of Soil Acidity and Major Plant Nutrients' <u>Ohio</u> 'Soil and Its Properties' <u>West Virginia</u> No. 02 "Soil Preparation" pH Meter Operations Manual Local Industry Performance Guide

PERFORMANCE
GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ANALYZE SOIL SAMPLES TO DETERMINE pH LEVELS

PERFORMANCE GUIDE

1. Review manual of instructions to determine the precise procedures to be followed in preparing samples.
2. Prepare samples according to instructions for preparing a soil solution.
 - a. measure out 25 milliliters of sample (beaker measure is satisfactory)
 - b. add 50 milliliters of distilled water
 - c. stir the mixture and let stand for 30 minutes, stirring occasionally
 - d. stir vigorously, just prior to reading
 - e. insert electrodes into prepared sample

CAUTION: Electrodes must be placed in the solution just above the soil, but must not come to rest in the soil.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ANALYZE SOIL SAMPLES TO DETERMINE SOLUBLE SALTS CONTENT

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a soil sample, an instrument (Solu-Bridge or equivalent), and a chart for interpreting readings, determine the soluble salts in the sample. Readings must vary no more than ± 5 percent from a prepared and pre-determined sodium standard solution.	1. view filmstrips/slides 2. read subject-matter units 3. group discussion of soluble salts effect on plant growth, ways to control soluble salts buildup 4. complete Performance Objective	1. notes 2. notes 3. participation 4. per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> 'Soil Testing & Fertility' <u>California</u> 'How to Collect & Test Soil Samples' <u>New York</u> No. 01.0599-02 'Preparing and Maintaining Ornamental Horticulture Soils' <u>Ohio</u> 'Soil and Its Properties' Local Industry Operator's Manual Performance Guide

PERFORMANCE GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ANALYZE SOIL SAMPLES TO DETERMINE SOLUBLE SALTS CONTENT

PERFORMANCE GUIDE

1. Place portion of well mixed soil sample in funnel that has been lined with filter paper.
2. Add distilled water until soil becomes saturated and begins to glisten.
3. Connect funnel to suction flask.
4. Draw off solution extract.
5. Place electrodes from bridge in extract.
6. Take reading.
7. Use chart to determine the percentage of soluble salts present in sample.
8. Clean Solu-Bridge and store in accordance with manufacturer's specifications.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? SHRED PLANTING MEDIA

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the required soil materials or medium to be shredded and the necessary tools and equipment, shred the planting medium. Planting medium must be shredded safely and thoroughly so that there are no lumps or unshredded materials.	1) View filmstrips/slides 2) Read subject matter units 3) Group discussion on shredder operation and safety 4) Group discussion on various materials which can be shredded and used as planting media 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Participation 5) Per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>California</u> 'Growing Media for Ornamental Plants' <u>Michigan</u> 'Peats for Soil Improvement and Soil Mixes' <u>New York</u> No. 01.0599-02 'Preparing and Maintaining Ornamental Horticultural Soils' <u>West Virginia</u> No. 02 'Soil Preparation' Local Industry Operator's Manual Performance Guide

PERFORMANCE
GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SHRED PLANTING MEDIA

PERFORMANCE GUIDE

1. Bring materials to proper moisture levels, approximating 10 percent of "field capacity".
2. Place shredder on swept concrete floor to facilitate collection of shredded materials.
3. Shovel medium into Shredder, controlling the rate to conform to the horsepower and capacity of the machine.
4. Collect medium from the shredder and place in bin.
5. Dispose of plastic bags or other packaging materials.
6. Clean shredder by washing with hose and wiping dry.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SCREEN PLANTING MEDIA

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a soil medium a shovel and a screen with openings sufficiently small to screen out lumps of soil, rocks or other debris, screen the medium. Medium must be free of all large chunks of soil, trash, sticks, grass, leaves or other forms of debris.	1) Read subject matter units 2) Group discussion of screen meshes, reasons for screening media, soil aeration 3) Complete Performance Objective	1) Notes 2) Participation 3) Per Performance Guide and instructor approval	Selections from "miscellaneous" resource list <u>Illinois</u> No. 4030 'Soil Texture' <u>New York</u> No. 01.0599-02 'Preparing and Maintaining Ornamental Horticulture Soils' Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SCREEN PLANTING MEDIA

PERFORMANCE GUIDE

1. Identify the media to be screened.
2. Place screen over a wheelbarrow, box or other receptical.
3. Using shovel, place successive shovelfuls of planting medium on screen, breaking the lumps up with the hands, if necessary.
4. Rescreen, if necessary.
5. Shake the screen to pulverize medium and to remove trash and all debris.
6. Dispose of debris in container.
7. Clean and store equipment.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MIX MEDIA MATERIALS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the required mixing ratios, materials, and a mechanical mixer, mix materials according to volume ratios specified. Ratios must be accurate to the nearest cubic foot per cubic yard for each ingredient used in the mix.	1) Read subject matter units/bulletins 2) Group discussion of mixer operation and safety 3) Group discussion of various soil/soilers media mixes 4) Complete Performance Objective	1) Notes 2) Participation 3) Participation 4) Per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>Michigan</u> 'Peats for Soil Improvement and Soil Mixes' <u>New York</u> No. 01.0599-02 'Preparing and Maintaining Ornamental Horticulture Soils' <u>West Virginia</u> No. 02 'Soil Preparation' Local Industry Operator's Manual Performance Guide

PERFORMANCE GUIDE

(attached)

FLORICULTURE

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MIX MEDIA MATERIALS

PERFORMANCE GUIDE

1. Measure out the specified ratios of ingredients.
2. Put ingredients into a mixing box, if mixing is to be done by hand, or a mechanical mixer.
3. Mix uniformly with a clean shovel or garden hoe.
4. If operating a mechanical mixer the length of time required for mixing will vary according to type of mixer and other factors, but mixing should continue until no color or textural differences can be observed in the mixed medium.
5. Store the mixed medium into a suitable container.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PASTEURIZE PREPARED MEDIA WITH STEAM

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the medium to be pasteurized, steam application thermal probe, a bench or pasteurizing bin and the necessary tools, pasteurize the medium. All items on the instructor's checklist must be rated acceptable.	1) Read subject matter units 2) Group discussion of steam applicator operation and safety 3) Group discussion of temperature ranges and their affect on pest irradiation, soil toxicities. 4) Complete Performance Objective	1) Notes 2) Participation 3) Participation 4) Per Performance Guide and Instructor Checklist	Selections from "Miscellaneous" resource list <u>Kentucky</u> No. GG-6 'Sterilizing Soil' <u>New York</u> No. 01.599-02 'Preparing and Maintaining Ornamental Horticulture Soils' <u>West Virginia</u> No. 02 'Soil Preparation' Local Industry Operator's Manual Performance Guide Instructor Checklist

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PASTEURIZE PREPARED MEDIA WITH STEAM .

PERFORMANCE GUIDE

1. Prior to working with material ascertain that all tools are sterile.
2. Check stem applicator to make certain it is in place and working properly.
3. Cover medium and seal with given cover.
4. Turn on steam at low pressure, take readings with thermal probe to assure that 180°F temperature is consistent throughout medium.
5. When temperature of medium is consistently 180°F, hold for a minimum of 30 minutes.
6. Allow medium to cool and stand until workable.
7. Cover medium to avoid contamination.
8. Clean all tools and equipment and store.

INSTRUCTOR'S CHECK LIST:

ACTIVITY	Rating*	
	ACCEPTABLE	UNACCEPTABLE
1. Procedures for steam pasteurization were reviewed.		
2. Tools and equipment were sterilized.		
3. Steam applicator and medium were placed in bin and sealed by means of a vinyl cover.		
4. Medium was brought to 180°F as determined by a thermal probe and held there for 30 minutes before allowing to cool.		
5. Pasteurized medium was stored in a sterile area.		

* All activities should be performed acceptably.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PASTEURIZE MEDIA WITH CHEMICALS

FLORICULTURE

PERFORMANCE OBJECTIVE

Given a bench containing the medium to be pasteurized, required chemicals, water, and vinyl covering, pasteurize the medium. All items on the instructor's checklist must be rated acceptable.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) view filmstrips/slides
- 2) read subject-matter units
- 3) group discussion of various liquids and chemical treatments used to pasteurize soils
- 4) complete Performance Objective

EVALUATION

- 1) notes
- 2) notes
- 3) participation
- 4) per Performance Guide and instructor checklist

REFERENCES

Selections from 'Miscellaneous' recourse list

Illinois

No. 1108-1.1 'Understanding and Safe Use of Pesticides'

Kentucky

No. NP-4 'Treating Soil with Soil Fumigants'
No. NP-5 'Sterilizing Soil with Liquids and Chemicals'

West Virginia

No. 02 'Soil Preparation'

Local Industry

Agricultural Chemical Catalogues

Performance Guide

Instructor Checklist

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PASTEURIZE MEDIA WITH CHEMICALS

PERFORMANCE GUIDE

1. Review manufacturer's instructions for safe and effective use of the treatment chemical.
2. Moisten medium to approximate 25 percent of field capacity.
3. Roll vinyl cover over the top of the bench, leaving ends open to insert the treatment chemical. Secure vinyl cover.
4. Activate the treatment chemical and insert under vinyl cover.
5. Allow cover to remain on medium for the time specified by the chemical manufacturer.
6. Ventilate area after chemical treatment, if necessary.
7. Clean all equipment according to manufacturer's directions.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PASTEURIZE FIELD SOILS WITH CHEMICALS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given treatment chemical, an infected field, a field tractor equipped with a 'vorlex' pump or similar system, pasteurize the soil. Treatment chemical will be applied in accordance with manufacturer's requirements prescribed rate and soil will test sterile following application.	1. read subject-matter unit 2. group discussion of manufacturer's instructions and safety precautions 3. complete Performance Objective	1. notes 2. participation 3. per Performance Guide	Selections from 'Miscellaneous resource list Kentucky No. NP-5 'Sterilizing Soil with Liquids and Chemical' Local Industry Manufacturer's Instruction Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PASTEURIZE FIELD SOILS WITH CHEMICALS

PERFORMANCE GUIDE

1. Service tractor and the pasteurization equipment to be used.
2. Adjust all elements of the tractor and applicator to insure that it is properly synchronized and coordinated.
3. Review safety regulations for use and follow same carefully.
4. Connect gas cylinders to equipment and bring to the required pressure. The gas may be regulated at the required pressure by adjusting the by-pass line so that the gas is supplied in excess and the excess is returned to the intake side of the pump.
Caution: The lines going to the cylinders must be tightened securely. If the system leaks, turn off cylinders and tighten. On some models it may be necessary to replace a gasket or coupling, but under no conditions should the equipment be operated if there is a leak in the system.
5. Operate tractor and pasteurization unit to make certain (1) that treatment chemical is fed into the soil evenly and uniformly and (2) that the plastic covering is secured with soil at its outer margins in order to prevent the escape of the fumigant.
Caution: No leaks are to occur as a result of failure to adequately cover the edge of the plastic.
6. Thoroughly clean tank and all applicator equipment following use and store.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MIX FERTILIZERS INTO MEDIA

FLORICULTURE

PERFORMANCE OBJECTIVE

Given a medium, granular fertilizer, shovel or hoe, and a wheelbarrow or other appropriate container, mix granular fertilizer into medium. Fertilizer will be thoroughly mixed into the medium in such a way that the chemical analysis of any random samples that could be taken would be approximately the same.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) view filmstrips/slides
- 2) read subject-matter units
- 3) group discussions on different types of granular fertilizers
- 4) complete Performance Objective

EVALUATION

- 1) notes
- 2) notes
- 3) participation
- 4) per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

California
'How to Fertilize Greenhouse Plants'

Kentucky
No. GG-9 'Applying Fertilizer'

West Virginia
No. 07 'Fertilizer'

Local Industry

Manufacturer's Instruction

Performance Guide

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MIX FERTILIZERS INTO MEDIA

PERFORMANCE GUIDE

1. Measure out fertilizer and medium according to the ratios which are to be used.
2. Put medium into a large box, wheelbarrow or other suitable receptacle.
3. Spread fertilizer on top of the medium.
4. Using a garden hose or shovel, begin at the outer edge and gradually mix the fertilizer into the medium.
5. Clean equipment following use and store.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? CONSTRUCT OPEN DRAINAGE DITCHES

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a blueprint or drawing and the necessary tools, materials and equipment, construct an open drainage ditch according to specifications. The drainage ditch must have sufficient fall to permit the escape of drainage water and otherwise meet existing needs as identified by the instructor.	1. Group discussion of drainage ditch requirements 2. Group review of blueprint and specifications 3. Complete Performance Objective.	1. participation 2. participation 3. per Performance Guide and instructor approval	Selections for 'Misc. Resource List Local Industry Soil Conservation Service Performance Guide
PERFORMANCE GUIDE (Attached)			

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ...CONSTRUCT OPEN DRAINAGE DITCHES

PERFORMANCE GUIDE

1. Remove all weeds, trash and other debris from the immediate area where drain is to be constructed.
2. Set stakes for location and alignment of drain.
3. Use alidade, transit or level for determining gradient and depth of cut.
4. Arrange for appropriate disposal of soil from construction site.
5. Using ditch digger, shovel or other equipment provided, dig drainage ditch to specifications.
6. Clean all tools and equipment following use and return to storage.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? . APPLY LIME AND/OR DOLOMITE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given either hydrated lime or dolomitic lime, soil with a low pH and a suitable applicator, apply the lime to the soil. Lime will be applied evenly and at the rate (usually 1-2 tons per acre) prescribed by the instructor. Subsequent soil tests of the treated soil will show the desired reduction in soil acidity.	1. read subject-matter unit 2. group discussion of different lime products and their application 3. group discussion of preliminary soil test report and crop requirement (pH levels) 4. complete Performance Objective	1. notes 2. participation 3. participation 4. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>Illinois</u> No. 4005 'Nature of Soil Acidity and Major Plant Nutrients' Local Industry Soil Conservation Service Co-operative Extension Service Office Manufacturer's Instructions Performance Guide

PERFORMANCE GUIDE

(Attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? APPLY LIME AND/OR DOLOMITE

PERFORMANCE GUIDE

1. Check out applicator and calibrate the same to make sure the desired quantity of lime carrier will be distributed.
2. Put lime or dolomite, whichever is to be used, in applicator and spread at the prescribed rate.
3. Disk or otherwise mix the lime into the soil.
4. Flush applicator with water and coat interior with oil when job has been completed and prior to storing to prevent corrosion of the metal parts.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLOW LAND

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a designated area of land to be plowed, a farm tractor with 3 point look up and a plow of appropriate size, plow the land. Plowing must be uniform depth throughout the field, there must be no skips and dead furrows must be left to facilitate leveling.	1. read manufacturer's instructions and safety regulations 2. complete Performance Objective	1. notes 2. per Performance Guide and instructor approval.	Selections from 'Misc.' Resource List Manufacturer's Instruction Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(Attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PLOW LAND

PERFORMANCE GUIDE

1. Identify the land area to be plowed.
2. Service the tractor and plow.
3. Hook plow to tractor.
4. Adjust the plow to meet the following requirements:
 - a. Plow is adjusted to desired depth and share runs parallel to the center line of the tractor.
 - b. The landside of the plow is vertical or as nearly vertical as possible.
5. Mark off area to be plowed into "lands" or areas of size which allow for the best economy in the use of fuel and time.
6. Plow the land beginning in the middle of the selected land and back furrow towards the opening furrow or center line.
7. Wash mouldboard and plow shares following use and coat them with oil to prevent rust prior to storage.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? , DISK LAND

FLORICULTURE

PERFORMANCE GUIDE

(attached)

Given a tractor with a 3 point hitch, land to be disked and a standard disk harrow, disk the area assigned. Disking will be uniform throughout the field and the soil will be free of large clods or clumps of sod and left in a level friable condition.

- 1) read manufacturer's instructions & safety regulations
- 2) complete Performance Objective

SUGGESTED LEARNING ACTIVITIES

EVALUATION

- 1) notes
- 2) per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list
Manufacturer's Instruction Performance Guide

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ... DISK LAND

PERFORMANCE GUIDE

1. Service the tractor and harrow.
2. Connect disk to tractor using 3 point hitch.
3. Adjust the disk to the proper cutting angle and depth depending upon condition of the land.
4. Double disk the land making certain that overfall is $\frac{1}{2}$ the width of disk.
5. Store unit under shelter following the coating of the disks with oil.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? . LEVEL OR SMOOTH FIELDS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a field to be smoothed and leveled, a tractor and land leveler, level and smooth the designated field. The entire field will be free of hummocks and potholes, and sufficiently smooth for planting the crop to be given.	1) read manufacturer's instructions and safety regulations 2) complete Performance Objective	1) notes 2) per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Manufacturer's Instruction Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? LEVEL OR SMOOTH FIELDS

PERFORMANCE GUIDE

1. Identify area to be smoothed and leveled.
2. Service tractor and leveling equipment.
3. Drive or otherwise convey tractor and equipment to assigned area.
4. Adjust the leveling equipment to the following standards:
 - a. The leveler pulls evenly and trails directly behind the tractor.
 - b. The cutting blade is level.
 - c. The set of the blade is low enough to remove the high areas but not too low as to cause a pile up of dirt in front of the blade or cutting mechanism.
5. Work the field in one direction over its entirety.
6. Work the field again at right angles to the direction of the first leveling if necessary to get it sufficiently level and smooth.

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MARK OFF PLANTING SPACES WITH BEDWIRE OR FIBERED PLASTIC

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a bed to be planted, the required bedwire or fibered plastic, posts, stakes, a mallet or post driver and suitable string or wire (if necessary), mark off planting places. Bedwire or fibered plastic must be stretched and secured to posts at all four corners of the bed at the desired height above the bed and also to stakes driven into ground on both sides of bedwire or fibered plastic.	1. view filmstrips/slides 2. read subject-matter units 3. complete Performance Objective	1. notes 2. notes 3. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>California</u> "How to Plant Seedlings" <u>New York</u> 01.0503-01 'Introduction to Growing Greenhouse Crops'
PERFORMANCE GUIDE (Attached)			Performance Guide

FLORICULTURE

UNIT: SOIL AND PLANTING MEDIA PREPARATION

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MARK OFF PLANTING SPACES WITH BEDWIRE OR FIBERED PLASTIC

PERFORMANCE GUIDE

1. Set posts at corners of the bed.
2. Roll out bedwire or fibered plastic to be used.
3. Stretch bedwire/plastic over bed and tie firmly to posts with string or wire on both ends of the bed.
4. Set stakes firmly at 10 feet intervals and at uniform height along both sides of the planting bed.
5. Affix wire/plastic to support stakes on both sides of the bed at ground level.
6. Return any extra stakes, wire/plastic or other unused items to storage.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PINCH FLOWERING PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given flowering plants in pots, beds or a field area and a pail or other receptacle, pinch the flowering plants. For plants 4-6 inches in height only about 4-6 leaves will be left on the pinched stem; small plants only the very tip of the stem (about 1/2 inch) will be pinched.	1) Read subject-matter units 2) Group discussion of plant growth, where to pinch plant, resulting growth habit of plants, schedule for pinching, etc. 3) Complete Performance Objective	1) Notes 2) Participation 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 5010a 'Growing Flowering Annuals' <u>New York</u> 01.0503-02 'Growing Bedding Plants' <u>Wisconsin</u> No. 100 'Success with Bedding Plants' Local Industry Performance Guide

PERFORMANCE GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PINCH! FLOWERING PLANTS

PERFORMANCE GUIDE

1. Identify the flowering plants to be pinched.
2. Grasp the stem tip and young immature leaves of each plant, snapping them from the plant by means of the thumb and forefinger.
3. Accumulate the severed tips and leaves in the pail provided for that purpose and discard

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? DISBUD FLOWERING PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given 6 or 8 flowering plants in the bud stage or a greater number growing in a bed, and the purpose or utility for which they are being grown, disbud the plants. Plants must be disbudded without any unnecessary damage and in such a way that their intended utility will be achieved.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion on plant types, purpose for being grown, method of disbudding to attain particular purpose, etc. 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-28 'Forcing Potted Plants to Bloom at Seasonal Times' <u>New York</u> 01.0503-03 'Growing Specialized Greenhouse Holiday Crops' <u>Ohio</u> 'Cut Flowers' 'Flowering Potted Plants' <u>Wisconsin</u> No. 511 'Flowering Potted Plants' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

DISRUPT FLOWERING PLANTS

PERFORMANCE GUIDE

1. Determine purpose for which the plant is being grown.
2. Pinch off buds using thumb and forefinger working systematically from one end of the bed to the other.
3. Dispose of parts removed from the plants.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

PRUNE PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a pruning knife, shears, a bucket or pail and 3 potted plants each of which is to be pruned for a specified purpose, prune the plants. Each plant must be pruned to achieve the stated purposes for pruning.	1) Read subject-matter units 2) Group discussion of reasons for pruning plants, methods of pruning, etc. 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Participation 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-66 'Removing Dead and Diseased Blooms and Plant Parts' <u>Wisconsin</u> No. 511 'Flowering Potted Plants' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PRUNE PLANTS

PERFORMANCE GUIDE

1. Identify each plant and the purpose for which it is to be pruned.
2. Prune the plant which is to be pruned to restrict growth and induce branching by taking off the tips of all the stems.
3. Prune the plant designated for pruning to improve shape by cutting or clipping off unbalanced, or unsymmetrical branches and stems.
4. Prune the plant from which dead leaves and diseased plant parts are to be removed to groom it for sale by pinching or cutting off all dead leaves or other plant parts and by cutting out spindly or weak shoots.
5. Collect all plant parts removed in the pruning process and dispose of same.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY GROWTH REGULATING CHEMICALS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a suitable sprayer, the required chemical solution and floral plants to be treated, apply growth regulating chemicals. The chemical solution must be sprayed uniformly and evenly over the entire leaf area of the plant.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of types of growth regulating compounds and uses, application of growth regulating compounds, etc. 4) Group discussion of EPA regulations for handling chemicals 5) Independent/group research of local industry practices 6) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Participation 5) Notes/report findings 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 5001 'Pointsettias - Care and Propagation' No. 5013 'Producing Pointsettias Commercially' No. 5014 'Growing Lilies' <u>California</u> 'How to Safely Use Sprays and Dusts on Plants' <u>Kentucky</u> NP-31 'Controlling Growth Rate by Applying Retardants' EPA Regulations Local Industry Performance Guide

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY GROWTH REGULATING CHEMICALS

PERFORMANCE GUIDE

1. Review manufacturer's specifications, especially those having to do with safety and rate of application.
2. Make sure the sprayer is clean, functions properly and that you are familiar with its operation.
3. Fill sprayer with required spray solution.
4. Bring tank to required air pressure.
5. Spray plants, covering the entire leaf area.
6. Clean sprayer and other equipment, making sure that sprayer is thoroughly rinsed and that screens and nozzles are treated with diesel fuel to prevent corrosion.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

FORCE BULBS (CONTROL TEMPERATURE, MOISTURE, AND LIGHT)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the necessary equipment and one or more types of Dutch bulbs which are to be forced to meet a prescribed time schedule, control temperature, moisture, and light to force bulbs and meet the required schedule. At least 95 percent of the bulbs must produce flowers on schedule.	1) Read subject-matter units 2) Group discussion on bulbs, corms, tuberous structures, etc., time schedules for forcing bulbs-cold treatments, pre-cooled bulbs, moisture, light levels, etc. 3) Review bulb catalogues for varieties and cultural/environmental practices 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Participation 3) Notes 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 5006 'Producing Plants by Asexual Propagation' <u>Kentucky</u> NP-6 'Planting Bulbs' NP-28 'Forcing Potted Plants to Bloom at Seasonal Times' <u>West Virginia</u> No. 08 'Greenhouse Control' Bulb Catalogues Local Industry Performance Guide

PERFORMANCE
GUIDE

(attached)

FLORICULTURE

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

FORCE BULBS (CONTROL TEMPERATURE, MOISTURE, AND LIGHT)

PERFORMANCE GUIDE

1. Drench the bulbs with fungicide.
2. Plant bulbs in desired medium, in a finishing container.
3. Place planted containers in cold storage, at 40 F for a period of time calculated according to time charts for forcing bulbs.
4. Remove container to growing area at appropriate time for that particular variety.
5. Maintain moisture and light levels as near the desired level as possible.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INSTALL SHADE CLOTH

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a greenhouse area where shade cloth needs to be installed, the required shade cloth, the necessary tools, materials and equipment, install the shade cloth. The shade cloth, when installed, must be firmly fastened to the frame of the superstructure, smooth and neat in appearance, meeting the purposes for which it was installed.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion on uses of shade cloth, types of shade cloth, manual/automatic shade cloth installation, etc. 4) Review manufacturer's instructions 5) Group field trip to local greenhouse to view shade cloth installation 6) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Notes 5) Participation 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 680 'Greenhouses - Uses and Designs' <u>Kentucky</u> NP-31 'Controlling Light Requirements by Shade Cloth' <u>Ohio</u> 'Greenhouses and Related Structures' <u>Texas</u> 'Greenhouse Operation and Management' <u>West Virginia</u> No. 08 'Greenhouse Control' Manufacturer's Instructions Local Industry Performance Guide

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INSTALL SHADE CLOTH

PERFORMANCE GUIDE

1. Identify the area to be covered and the purpose of installation.
2. Check support wires and framework of the superstructure over which shade cloth is to be installed to make sure all is in readiness.
3. Determine the best method to use in the installation process - whether by pig rings, grommets, or other means.
4. Determine the specific measurements of the area.
5. Allowing for necessary overlap, cut the required length or lengths of shade cloth from roll or bolt to meet requirements.
6. Install shade cloth following the recommended procedures for the method determined to be most satisfactory.
7. Clean tools and equipment used returning all items to their proper place when task has been completed.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY SHADING COMPOUND OR PAINT TO GREENHOUSE GLASS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the specified foot candle requirements, light meter sprayer and a greenhouse on which shading compound is to be applied to the greenhouse glass, apply shading compound. Successive coats of shading compound are to be applied uniformly to obtain the required foot candle reading $\pm$ 10 percent on a clear day.	1) Read subject-matter units 2) Group discussion of types of shading compound (lime, latex) schedules for application, removal of shading compound, etc 3) Review manufacturer's instructions 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Participation 3) Notes 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Texas</u> 'Greenhouse Operation and Management' <u>West Virginia</u> No. 08 'Greenhouse Control' Manufacturer's Instructions Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY SHADING COMPOUND OR PAINT TO GREENHOUSE GLASS

PERFORMANCE GUIDE

1. Check out spray apparatus to make sure it is operational.
2. Determine foot candle light requirements and apply compound as required to obtain the desired foot candle reading.
Caution: Do not apply more compound than is needed; it is easier to spray on an additional coat than it is to remove the compound once it is applied.
3. Clean spray gun and other equipment used and return to storage.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INSTALL BLACK CLOTH TO REGULATE PHOTOPERIOD

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given one or more benches or beds with growing plants, black cloth, support wires and all other essential equipment and/or materials, regulate the photoperiod by installing and covering the plants with black cloth. The black cloth, when installed, must eliminate all by 2 foot candles the light during the regulated time period. Also, black cloth must be installed in such a way that it can be easily removed and replaced.	1) Read subject-matter units 2) Group discussion on types and uses of black cloth, photoperiodisms, etc. 3) Review Manufacturer's instructions 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Participation 3) Notes 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-28 'Forcing Potted Plants to Bloom at Seasonal Times Manufacturer's Instructions Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INSTALL BLACK CLOTH TO REGULATE PHOTOPERIOD

PERFORMANCE GUIDE

1. Determine which width of black cloth is required and select appropriate width.
Caution: Cloth must be wide enough to cover the entire bench with enough overlap on sides and ends to exclude all light.
2. Check support wires to make certain that they are satisfactory, and that there are no sharp edges that might snag the cloth or interfere with the covering and uncovering of the plants.
3. Roll out the black cloth over the wires and plants.
4. Tighten cloth enough to prevent sagging and exclude light.
5. Use clothes pins, clips and weights if necessary to secure ends and corners of cloth.
6. Return tools and unused cloth or other materials to their proper place for storage.
7. Remove cloth after regulated time period, replacing the same as required.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PROVIDE THE REQUIRED LIGHT INTENSITY FOR PHOTOPERIOD CONTROL

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a greenhouse bench or field bed, a specified foot candle reading to be attained, light bulbs, insulated electrical wire, clamp-on sockets, supports for the wires, and a light meter capable of measuring very low light intensities (0-50 foot candles), place light bulbs at proper height and spacing to provide the minimum specified foot candle of light on all areas of bench or bed. The specified light intensity will be verified by the use of a light meter.	1) Read subject-matter units 2) Independent/group research of local industry practices 3) Group discussion on photoperiodism, footcandle measurements, etc. 4) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Participation 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-28 'Forcing Potted Plants to Bloom at Seasonal Times' <u>Texas</u> 'Greenhouse Operation and Management' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PROVIDED THE REQUIRED LIGHT INTENSITY FOR PHOTOPERIOD CONTROL

PERFORMANCE GUIDE

1. Put up supports for the wire. These should be spaced on approximately 20 feet centers.
2. Put up wire. The wire should be fastened to the supports securely, with no sag between supports.
3. Clamp sockets on wire at trial spacing. The sockets may need to be rearranged to provide the desired amount of light.
4. Insert light bulbs in the sockets.
5. Measure foot candle at night or under black cloth at edges of bench or field using light meter.
6. Readjust spacing or wattage of bulbs if a minimum of 10 foot candles are not being received at all points in the field or on the bench.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? . REGULATE TIME CLOCKS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a specified floral crop functional time clocks and an adequate artificial lighting system, set clocks to provide the required duration of light by $\pm$ 5 percent. Lights must come on within 5 minutes of the time specified by the instructor.	1) Read subject-matter units 2) Review Manufacturer's Instructions 3) Independent/group research of local industry practices 4) Group discussion of critical night period, light levels, etc. 5) Complete Performance Objective	1) Notes 2) Notes 3) Notes/report findings 4) Participation 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Texas</u> 'Greenhouse Operation and Management' <u>West Virginia</u> No. 08 'Greenhouse Control' Manufacturer's Instructions Local Industry Performance Guide

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GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REGULATE TIME CLOCKS

PERFORMANCE GUIDE

1. Determine critical night period for crop.
2. Set time clock correctly to trigger the desired response.
Note: The mechanics of setting the clock are covered in Irrigation Practices - Regulate Overhead Irrigation System (Time Clocks)
3. Measure the light being received by the flower crop to make sure it is within 5 percent of the required level.
4. Check on and off times of the lights. Differences between the desired times and the actual cycling time should never exceed 5 minutes.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

ADJUST OR CONTROL TEMPERATURE (AIR CONDITIONING, VENTS OR FANS)

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a range of temperature to be maintained in a greenhouse and thermostats connected to the air conditioning system, bring the greenhouse temperature to the desired reading. The temperature must be brought within the prescribed range of temperature within 1-2 hours after adjustment.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of greenhouse cooling systems - vents, fans, evaporative cooling systems, fan and pad systems; affect of temperature fluctuations on crops, suggested day/night/cloudy day greenhouse temperatures, etc. 4) Independent/group research of local industry practices 5) Field trip to local greenhouse to view temperature control methods used. 6) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Participation 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 68 'Greenhouses - Uses and Design' <u>Kentucky</u> NP-27 'Setting and Adjusting Thermostats' <u>Ohio</u> 'Greenhouses and Related Structures' <u>Texas</u> 'Greenhouse Operation and Management' <u>West Virginia</u> No. 08 'Greenhouse Control' Manufacturer's Instructions Local Industry Performance Guide

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GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

ADJUST OR CONTROL TEMPERATURE (AIR CONDITIONING, VENTS OR FANS)

PERFORMANCE GUIDE

1. Calibrate thermostat with thermometers by adjusting thermostats to the correct temperature readings.
2. Operate vent openings prior to fan operation to make certain that they function properly.
3. Bring temperature to a reading within a specified acceptable range.
4. Maintain the temperature within the specified temperature range.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

CHECK AND TURN ON FIELD HEATERS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given from 6-12 oil burning field heaters installed as a precaution against frost, check, turn on and light the heaters. Assigned heaters must be checked and lighted in keeping with acceptable safety standards and must function properly when they have been lighted.	1) Review Manufacturer's Instructions and safety regulations 2) Group discussion on filling, lighting, adjusting heater and safety precautions to be followed. 3) Complete Performance Objective	1) Notes 2) Participation 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Manufacturer's Instructions Local Industry Performance Guide

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(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

CHECK AND TURN ON FIELD HEATERS

PERFORMANCE GUIDE

1. Check oil levels and replenish the oil if necessary by removing filler cap on the 'base'.
2. Determine that the stack is not clogged or capped.
3. Light each of the assigned heaters in accordance with acceptable safety standards.
4. Adjust the heaters to operate at maximum efficiency either by increasing or decreasing the air intake value located on the top of the filler cap.
5. Turn off heaters when instructed to do so.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? CULTIVATE SOILS WITH A ROTOTILLER

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a rototiller and a plot of land, rototill the soil in the assigned area preparatory to planting. Rototilled soils must be broken up, pulverized and left in a loose friable condition without large holes or 'hummocked' areas.	1) View filmstrips/slides 2) Read subject-matter units 3) Review Manufacturer's Instructions 4) Group discussion on soil texture, structure, its affect on plant growth, etc. 5) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Participation 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>California</u> 'Growing Media for Ornamental Plants' <u>New York</u> 01.0599-02 'Preparing and Maintaining Ornamental Horticulture Soils' <u>West Virginia</u> No. 02 'Soil Preparation' Manufacturer's Instructions Local Industry Performance Guide

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GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

CULTIVATE SOILS WITH A ROTOTILLER

PERFORMANCE GUIDE

1. Identify plot of land to be rototilled.
2. Service and check out rototiller.
3. Adjust depth setting on rototiller by adjusting the depth control mechanism.
4. Rototill the assigned area by:
 - a. starting on one side of the field or
 - b. by starting in the middle and making consecutive overlapping passes until the entire field is finished.Either procedure is acceptable.
5. Clean rototiller following use and store it in its proper place.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

AERATE COMPACTED SOILS IN BEDS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given pine bark, cypress shavings, peat moss, sand, perlite or vermiculite, the required equipment and soils that are too heavy and compacted for producing a good floriculture crop, aerate the soil. The ratios of sand or clay to perlite, vermiculite and/or peat moss or other organic residues must be widened and thereby the physical condition of compacted soils will be made much more porous and friable. Aerated soil must be sufficiently porous to permit adequate circulation of air and to retain water. PERFORMANCE GUIDE (attached)	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of various soil amendments, their uses, pH levels, soil/soiless mixes, etc. 4) Independent/group research of local industry practices 5) Complete Performance Guide	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 4028 'Soil Structure' No. 4029 'Soil Color' No. 4030 'Soil Texture' No. 4052 'Understanding Soils' <u>California</u> 'Growing Media for Ornamental Plants' <u>Michigan</u> E-516 'Peats for Soil Improvement and Soil Mixes' <u>New York</u> 01.0599-02 'Preparing and Maintaining Ornamental Horticulture Soils' <u>Ohio</u> 'Soil and Its Properties' <u>West Virginia</u> 'No. 02 'Soil Preparation' Local Industry Performance Guide

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

AERATE COMPACTED SOILS IN BEDS

PERFORMANCE GUIDE

1. Determine degree of aeration required.

Caution: Aeration for floral crops requires the adding of different materials such as vermiculite, peat moss and other organic residues to the existing medium. Since there is no exact way of determining the quantities of the various materials, aeration is sometimes a 'trial and error' process. But feeling and squeezing the soil should give a good idea of the density and porosity of the soil, providing the best clues for 'aeration'.

2. Mix proportionate amounts of sand, perlite, vermiculite, peat moss, pine bark, cypress shavings, or other organic material. Amount to be mixed will vary with the degree of porosity desired.
3. Stor equipment and left over materials following use.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

STAKE AND TIE PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given suitable twin string, the necessary stakes and flowering plants requiring support other than that provided by roots, stake and tie the plants. support stakes must be placed in such a way that they will not damage existing roots or impair root development and string must not be tied so tightly that it will cut or damage the stems and branches.	1) Group discussion on correct methods of staking plants, reasons for staking, etc. 2) Independent/group research of local industry practices 3) Complete Performance Objective	1) Participation 2) Notes/report findings 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
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(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

STAKE AND TIE PLANTS

PERFORMANCE GUIDE

1. Identify the particular plants needing to be staked and tied.
2. Place stakes in such a way that they will not damage plant roots and at sufficient depth to sustain the plants.
3. Tie plants to stakes firmly to hold them in an upright position, but not so tightly that stems will be damaged or growth impeded. Larger plants should be tied both at or near the top and also near the bottom.
4. Return tools and extra materials to storage when the job is completed.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

RAISE OR ELEVATE BEDWIRE OR FIBERED PLASTIC

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a pair of pliers, tie wire, a knife, a flower crop growing in a greenhouse, and bedwire or fibered plastic in place and a specified height to which it is to be raised, elevate the bedwire or add another layer of fibered plastic to the new level. The bedwire/fibered plastic must be raised to the prescribed level $\pm 1/2$ inch, well secured and no more than 0.01 percent of the growing plants are to be injured in the process.	1) View filmstrips/slides 2) Read subject-matter units 3) Review Manufacturer's Instructions 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>New York</u> 01.0503-01 'Introduction to Growing Greenhouse Crops' <u>Ohio</u> 'Cut Flowers' Manufacturer's Instructions Local Industry Performance Guide

FLORICULTURE

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(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

RAISE OR ELEVATE BEDWIRE OR FIBERED PLASTIC

PERFORMANCE GUIDE

BEDWIRE

1. Loosen ties or hanger brackets where bedwire is secured to the posts or steel support stakes at the ends of the bed.
2. Loosen, raise and reattach one side of the bedwire at the desired height.
3. Loosen, raise and reattach the other side of the bedwire so that it will be level with the opposite side.
4. Raise and reattach the ends of the bedwire to correspond with the sides.
5. Return pliers and unused materials to their appropriate places.

FIBERED PLASTIC

1. Determine length of fibered plastic needed to cover bed area. Cut plastic from roll in desired length.
2. Attach fibered plastic to posts or steel support stakes at the ends of the bed. Make sure plastic is at the proper height.
3. Return pliers, knife and unused materials to their appropriate places.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY GRANULAR FERTILIZER

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given granular fertilizer, a specified application rate, a plot of land where a floral crop is to be planted and a broadcast fertilizer spreader and tractor with which the fertilizer is to be applied, calibrate the spreader to deliver the specified amount of fertilizer and apply the same. There must be no spills and the fertilizer must be applied uniformly at the specified rate $\pm$ 5 percent.	1) View filmstrips/slides 2) Read subject-matter units 3) Review Manufacturer's Instructions on fertilizer and spreader 4) Independent/group research of local industry practices 5) Group discussion of various forms of fertilizer and methods of application - broadcasting, sidedressing, banding, etc. 6) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Notes/report findings 5) Participation 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 4010a 'Planning a Fertilizer Program' <u>California</u> 'How to Fertilize Greenhouse Plants' <u>Kentucky</u> GG-9 'Applying Fertilizer' GG-10 'Cleaning and Lubricating Fertilizer Applicators' FD-6 'Fertilizing Plants' <u>Michigan</u> E-486 'Secondary & Micronutrients' <u>New York</u> 01.0599-01 'Controlling Insects, Diseases, & Fertilization' <u>West Virginia</u> No. 07 'Fertilizer' Manufacturer's Instructions Local Industry Performance Guide

PERFORMANCE
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(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY GRANULAR FERTILIZER

PERFORMANCE GUIDE

1. Check fertilizer spreader to determine that it is functional.
2. Mark off 100-500 square feet of land area for testing and calibrating the spreader.
3. Set feed controls on spreader to apply the desired amount of fertilizer.
4. Adjust setting up or down as necessary to give the desired rate.
5. Calculate new rate and adjust setting further if necessary.
6. Using a systematic procedure, pull the spreader with tractor and apply the fertilizer.
7. Wash out spreader with water to remove dust or granules that have a corrosive effect on the spreader and cause rust.
8. Treat moving parts of spreader with oil and store when the job is finished.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? . APPLY LIQUID FERTILIZER

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a floral crop to be fertilized, an automatic irrigation system, liquid fertilizer, the desired ratio of fertilizer liquid to water, and an injection system, apply the liquid fertilizer mechanically to the floral crop. The liquid fertilizer must be applied in the amounts designated.	1) View filmstrips/slides 2) Read subject-matter units 3) Review Manufacturer's Instructions on fertilizer and injector system 4) Independent/group research of local industry practices 5) Group discussion of soluble forms of fertilizer and methods of application, various injector systems, etc. 6) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Notes/report findings 5) Participation 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 4010a 'Planning a Fertilizer Program' <u>California</u> 'How to Fertilize Greenhouse Plants' <u>Kentucky</u> GG-9 'Applying Fertilizer' GG-10 'Cleaning and Lubricating Fertilizer Applicators' FD-6 'Fertilizing Plants' <u>Michigan</u> E-486 'Secondary & Micro-nutrients' <u>New York</u> 01.0599-01 'Controlling Insects, Diseases, & Fertilization' <u>West Virginia</u> No. 07 'Fertilizer' Manufacturer's Instructions Local Industry Performance Guide

PERFORMANCE GUIDE

(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

APPLY LIQUID FERTILIZER

PERFORMANCE GUIDE

1. Determine the amount of irrigation water to be applied for unit area of crop.
2. Determine the amount of liquid fertilizer required to give the desired ratio.
3. Inject liquid fertilizer into irrigation system in accordance with requirements.
4. Time the irrigation to apply the required amounts of fertilizer.
5. Flush the system following use to prevent corrosion and deterioration of the system.
Caution: If detergent is used in flushing select a detergent that will not harm the crop.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE WEEDS MANUALLY FROM POTTED PLANTS

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given one or more benches in the greenhouse filled with potted flower or foliage plants of variable size and species, manually remove all weeds growing in the potted plants. 98 percent of the visible weeds must be removed within a period of time to be specified by the instructor. None of the plants are to be damaged in the process.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of reasons to remove weeds from plants (competition), common weeds, etc. 4) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 791a 'Weed Identification' No. 791a (supp) 'Practice Set Weed Identification' No. 800 'Identification of Weed Seedlings, Pt. I' No. 801 'Identification of Weed Seedlings, Pt. II' No. 803 'Identification of Weed Seedlings, Grasses' No. 811 'The Wicked World of Weeds' <u>Ohio</u> 'Weed Control - Cultural and Chemical' Local Industry Performance Guide

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE WEEDS MANUALLY FROM POTTED PLANTS

PERFORMANCE GUIDE

1. Identify flowering/foilage plants in post from which weeds are to be removed.
2. Systematically remove weeds with fingers.
Caution: Care must be taken to pull up the weeds rather than breaking them off above the ground; otherwise the weeds may grow again.
3. Dispose of collected weeds when task is completed.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE WEEDS MANUALLY FROM FLORAL CROPS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a field area or bed of flowering plants to be weeded, a hoe or other suitable implement for removing weeds manually, remove the weeds. Floral plants must not be damaged in the weeding process and 95 percent or more of all visible weeds must be cut off below ground level and removed.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of reasons to remove weeds from plants (competition), common weeds, etc.. 4) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 791a 'Weed Identification' No. 791a(supp) 'Practice Set Weed Identification' No. 800 'Identification of Weed Seedlings, Pt. I' No. 801 'Identification of Weed Seedlings, Pt. II' No. 803 'Identification of Weed Seedlings, Grasses' No. 811 'The Wicked World of Weeds' <u>Ohio</u> 'Weed Control - Cultural and Chemical' Local Industry Performance Guide

PERFORMANCE
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(attached)

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE WEEDS MANUALLY FROM FLORAL CROPS

PERFORMANCE GUIDE

1. Identify beds or other area to be weeded.
2. Remove weeds by cutting them out with a hoe or other suitable implement, checking carefully for weeds that might be hidden by the foliage of the floral crop.
3. Dispose of weeds that have been removed.
4. Clean and store hoe or other tools following use.

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

**WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?**

REMOVE WEEDS WITH TRACTOR DRAWN MECHANICAL CULTIVATORS

FLORICULTURE

**PERFORMANCE
GUIDE**

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a field of flowers planted in rows needing to be weeded, tractor with a 3 point hitch and an adjustable sweep type cultivator, remove the weeds by cultivation. No more than 1 percent of the floral plants will be damaged in the cultivation process and at least 90 percent of all visible weeds will be killed.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion of reasons to remove weeds from plant area (competition), common weeds, etc. 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 791a 'Weed Identification' No. 791a(supp) 'Practice Set Weed Identification' No. 800 'Identification of Weed Seedlings, Pt. I' No. 801 'Identification of Weed Seedlings, Pt. II' No. 803 'Identification of Weed Seedlings, Grasses' No. 811 'The Wicked World of Weeds' <u>Ohio</u> 'Weed Control - Cultural and Chemical' Local Industry Performance Guide

UNIT: CULTURAL AND ENVIRONMENTAL CONTROL PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE WEEDS WITH TRACTOR DRAWN MECHANICAL CULTIVATORS

PERFORMANCE GUIDE

1. Identify the field area to be cultivated.
2. Connect cultivator to tractor and perform a pre-service check on the unit prior to use.
3. Set cultivator sweep distances and make necessary adjustments on the cultivator.
4. Drive tractor down rows removing as many as possible of the weeds without damaging the floral crop.
5. Clean and store cultivator and tractor when the task is finished.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

SET TIME CONTROL VALVES (CLOCKS)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given an automatic irrigation system that is operating well on a specified cycle, reset the time clocks so that the valve will open and close properly for implementing a prescribed new schedule. When the control clocks have been reset and adjusted, the actual cycling must not deviate from the prescribed or desired cycling schedule by more than four minutes.	1. view filmstrips/slides 2. read subject-matter units 3. review manufacturer's information 4. complete Performance Objective	1. notes 2. notes 3. notes 4. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>California</u> 'How to Water Greenhouse Plants' <u>Kentucky</u> No. GG-51 'Watering Plants' Manufacturer's Information Performance Guide

PERFORMANCE
GUIDE

(Attached)

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SET TIME CONTROL VALVES (CLOCKS)

PERFORMANCE GUIDE

1. Obtain irrigation schedule.
2. Observe system to determine cycling.
3. Set time clocks to conform to desired schedule.
4. Test system on new schedule to make certain it is reliable, making such adjustments as may be required.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? HAND WATER PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given designated plants requiring hand watering, a reliable source of water, a garden hose with an appropriate water breaker, hand irrigate the plants. All plants are to receive the required amount of water and none are to be damaged either through receiving too much water or by washing out the medium if applied too fast.	- view filmstrips/slides - read subject-matter units - group discussion on under watering/overwatering symptoms - complete Performance Objective	- notes - notes - participation - per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>California</u> 'How to Water Greenhouse Plants' <u>Kentucky</u> No. GG-51 'Watering Plants' No. FD-5 'Watering Potted Plants' Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(Attached)

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? HAND WATER PLANTS

PERFORMANCE GUIDE

1. Locate source of water and attach hose to feed the water breaker.
2. Apply water according to requirements. Most greenhouse plants have been irrigated sufficiently when the water first starts to ooze out of the bottom holes in the can.
3. Put away hose or other equipment each day following use. Water should be out as well as possible before it is stored. Also, a hose should never be left with the water on and nozzle closed as it may rupture.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? . APPLY WATER IN DITCHES OR FURROWS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given shovels, hoes, syphon tubes or other conveyors, a flower crop grown under field conditions to be irrigated, a source of water and the necessary distributing ditches and furrows, apply irrigation water to the crop. Water must be evenly distributed in furrows over the area to be irrigated in such a way that there will be adequate and uniform wetting with little or no erosion and loss of either water or soil from the field. PERFORMANCE GUIDE (Attached)	1. read subject-matter unit 2. complete Performance Objective	1. notes 2. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>Kentucky</u> No. NP-23 'Watering Plants' Performance Guide

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? APPLY WATER IN DITCHES AND FURROWS

PERFORMANCE GUIDE

1. Check all ditches and turnouts for adequacy in handling water.
2. Determine irrigation schedule and availability of water.
3. Set water in tiers of open furrows or through syphons, whichever is preferred.
Caution: To start and maintain the flow of water through syphons the water in the distributing ditch must be maintained at a higher level (usually at least 3-4 inches higher) than that of the irrigation furrow. If it is not maintained at a sufficiently high level the water will cease to flow through the syphon.
4. Tend water continually to prevent clogging of furrows or syphons.
5. Turn pump or other source of water off when task is completed.
6. Clean all equipment and return to storage following use.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? REGULATE OVERHEAD IRRIGATION SYSTEM (TIME CLOCKS)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given an irrigation well, a pumping station and a control center with timing system, change the cycle to meet a specified irrigation schedule. The specified schedule must be programmed correctly on the time clock and cut "off" and "on" according to schedule.	1. read subject matter unit 2. review manufacturer's instructions 3. complete Performance Objective	1. notes 2. notes 3. per Performance Guide and instructor's approval	Selections from 'Misc.' Resource List Kentucky No. GG-47 'Servicing Irrigation Systems' Manufacturer's Instructions Performance Guide

PERFORMANCE GUIDE

(Attached)

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ... REGULATE OVERHEAD IRRIGATION SYSTEM (TIME CLOCK)

PERFORMANCE GUIDE

1. Operate system and observe current cycling pattern.
2. Remove timing stops and replace them to meet a specified or given schedule. Timing stops are located on a round dial which is marked off in minutes and seconds.
3. Check system to verify that the proper station is in operation at the time indicated on the irrigation schedule.
4. Set time clock so that it corresponds to the time of day.
5. Operate system to check cycling and then adjust if necessary.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? REGULATE TRICKLE OR OOZE IRRIGATION SYSTEM

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a trickle/ooze irrigation system requiring regulation, a pressure guage and a pressure regulator, regulate the system to a specified pressure. The adjusted pressure must be correct $\pm 1/2$ pounds per square inch.	1. view filmstrips/slides 2. read subject-matter units 3. group discussion of various trickle/ooze irrigation systems 4. complete Performance Objective	1. notes 2. notes 3. participation 4. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List <u>California</u> 'How to Water Greenhouse Plants' <u>Kentucky</u> No. GG-51 'Watering Plants' No. GG-47 'Servicing Irrigation Systems'

PERFORMANCE
GUIDE

(Attached)

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REGULATE TRICKLE OR OOZE IRRIGATION SYSTEM

PERFORMANCE GUIDE

1. Read gauge and determine if reading is too high or too low when stabilized.
2. Adjust the regulator handle to obtain the desired reading.
Caution: The system should be adjusted while it is in operation to insure accurate pressure readings.
3. Check system for leaks and repair the same if they are found.
4. Read gauge and make final adjustments based on irrigation requirements.

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PUMP WATER FOR IRRIGATION

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a well, lake or other adequate source of irrigation water and either a diesel or electric irrigation supply pump, pump water for irrigation. Pump must be started and operated to the satisfaction of the instructor and in accordance with the instructions contained in the operator's manual.	1. review manufacturer's information and safety recommendations 2. complete Performance Objective	1. notes 2. per Performance Guide and instructor approval	Selections from 'Misc.' Resource List Manufacturer's Instructions Performance Guide

PERFORMANCE
GUIDE

(Attached)

FLORICULTURE

UNIT: IRRIGATION PRACTICES

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? PUMP WATER FOR IRRIGATION

PERFORMANCE GUIDE

1. Make the necessary service check to insure the smooth and safe operation of the pump.
2. Start motor and operate the pump. It may be necessary to prime the pump if the pump is not self-priming.
3. Return all unused service material and equipment to storage.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? IDENTIFY AND REPORT SPRAY DAMAGE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a pencil and pad, a bed of flowers growing in a greenhouse, a portion which has been damaged by spray, identify that portion of the bed which has been damaged by spray, describe it and report the same in writing. In no case will the spray damaged area be missed and 8 out of 10 statements made in the written report must be verified as correct.	1) group discussion of spray damage identification 2) I.D. Quiz of spray damages 3) Complete Performance Objective	1) participation 2) 90% correct on I.D. quiz 3) per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Co-Operative Extension Service Office Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? ... IDENTIFY AND REPORT SPRAY DAMAGE

PERFORMANCE GUIDE

1. Review characteristics of spray damage in contrast to damage resulting from drought and application of excessive amounts of fertilizer.
2. Identify the bed to be examined for spray damage.
3. Identify spray damaged area, describe the same and report it in writing.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? SET OUT POISON BAIT TO ERADICATE RODENTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given poison bait and an area where rodents are to be eradicated, set out the poisoned bait. Bait must be placed not only where it will be conveniently accessible to rodents but also where it will not be eaten by cats, dogs, chickens, or domestic animals.	1) read subject-matter unit 2) independent/group research of local industry practices 3) complete Performance Objective	1) notes 2) notes/report findings 3) Per Performance Guide and instructor approval	Selections from Miscellaneous resource list <u>Kentucky</u> No. NP-58 'Controlling Animal Pest's Local Industry Co-Operative Extension Service Office Performance Guide
PERFORMANCE GUIDE (attached)			

FLORICULTURE

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? SET OUT POISONED BAIT TO ERADICATE RODENTS

PERFORMANCE GUIDE

1. Identify area to be baited.
2. Place the bait in such a way that it will be accessible to rodents without danger to domestic animals.
3. Dispose of dead rodents when found.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REMOVE DISEASED PLANTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given plants grown in beds, pots or frames in the greenhouse or shadehouse, observe these plants regularly, removing those that are diseased. At least 98 percent of the diseased plants must be identified and removed.	1) read subject-matter units 2) group discussion of importance of removing diseased plants 3) complete Performance Objective	1) notes 2) participation 3) per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> No. NP-59 'Removing Diseased Plants' <u>West Virginia</u> No. 09 - 'Disease and Pest Control' Local Industry Co-operative Extension Service Office Performance Guide
PERFORMANCE GUIDE (attached)			

FLORICULTURE

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REMOVE DISEASED PLANTS

PERFORMANCE GUIDE

1. Review symptoms of most common diseases of floral plants.
2. Remove all plants that are diseased or carry disease symptoms.
3. Properly dispose of all diseased plants.
Caution: If there is a serious disease problem, burning is the preferred method of disposal.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? . APPLY CHEMICALS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a designated land area or greenhouse plants on which a chemical solution is to be applied, the solution, a suitable sprayer and the recommended clothing or other safety equipment, apply the chemical. All necessary safety precautions should be followed and the solution must be applied uniformly at the recommended rate, covering the plants uniformly and thoroughly.	1) view filmstrips/slides 2) read subject-matter units 3) group discussion of E.P.A. standards/regulations, safety equipment and clothing 4) Complete Performance Objective	1) notes 2) notes 3) participation 4) per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 1108-1.2 'Selecting and Handling Pesticides' No. 1108-1.3 'Calibrating and Applying Pesticides Safely' No. 4045a 'Handling and Using Pesticides Safely' <u>California</u> 'How to Safely Use Sprays and Dusts on Plants' <u>Georgia</u> 'Handling Pesticides Safely' 'Type and Size of Sprays to Use' 'Applying Pesticides' <u>Kentucky</u> No. GG-72 'Applying Chemicals to Diseased Plants' E.P.A. Standards Regulations Co-Operative Extension Service Office Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? APPLY CHEMICALS

PERFORMANCE GUIDE

1. Check the sprayer to make sure it is in good working order.
2. Using water rather than spray solution, calibrate the sprayer to apply the precise amount of spray desired.
3. Put on the appropriate clothing for meeting safety requirements.
4. Put spray solution in sprayer.
5. Bring spray tank to recommended pressure.
6. Apply spray to plants.
7. Thoroughly wash and clean sprayer and all equipment used when task is completed.
8. Return all tools and equipment to storage.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? . MIX CHEMICALS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a specified number of plants or land area to be treated and the water, chemicals tanks, and safety equipment necessary for mixing, mix the required amount of spray solution for use on the spcified plants or land area to be treated. The chemicals must be mixed according to the manufacturer's specifications. The amount of solution mixed must equal but should not exceed requirements by more than 5 percent.	1) view filmstrips/slides 2) read subject-matter units 3) group discussion of various forms of chemicals and compatibility of chemicals 4) complete performance Objective	1) notes 2) notes 3) participation 4) per Performance Guide and instructor approval	Selections from "Miscellaneous Resource List" <u>Illinois</u> No. 1108-1 'Understanding and safe use of Pesticides' No. 1108-1.2 'Selecting and Handling Pesticides' No. 4045a 'Handling and Using Pesticides Safely' <u>Georgia</u> 'Handling Pesticides Safely <u>Kentucky</u> No. NP-52 'Mixing Chemicals <u>Wisconsin</u> No. 150 'Understanding Pesticide Labels' E.P.A. Standards and Regulations Co-Operative Extension Service Office Performance Guide

PERFORMANCE GUIDE

(attached)

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? MIX CHEMICALS

PERFORMANCE GUIDE

1. Review mixing procedures as provided by the manufacturer to determine exact procedures to be followed in mixing and also the amount of spray solution required.
2. Review safety precautions and measures to be followed in mixing.
3. Mix the required amount of spray solution.
4. Clean all containers and other items used for mixing, returning them along with any unused materials to their proper place when the task is finished.
5. Dispose of used cartons or other contaminants in accordance with current Environmental Protection Agency regulations.
Caution: Do not burn pesticide containers.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REMOVE DEAD AND DISEASED PLANT PARTS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a pair of floral shears, a knife and specimens of potted plants and/or other floriculture specimens grown for market, remove all dead or diseased plant parts which might detract from the appearance of the plants or interfere with their market value. All of the dead or diseased plant parts must be removed.	1) read subject-matter units 2) complete Performance Objective	1) notes 2) per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>Kentucky</u> No. NP-66 'Removing Dead and Diseased Blooms and Plant Parts' <u>New York</u> 01.0599-08 'Preparing Flowers for Sale' <u>West Virginia</u> No. 09 'Disease and Pest Control' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REMOVE DEAD AND DISEASED PLANT PARTS

PERFORMANCE GUIDE

1. Identify plants from which diseased parts are to be removed.
2. Remove diseased plant parts without damaging plants.
3. Destroy plant parts that have been removed.

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REPORT DISEASE AND INSECT DAMAGE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a hand lens or other magnifying glass and floral plants growing in a greenhouse, shadehouse or in an open field, examine the plants and report the damage resulting from (1) disease and (2) insects. Ninety percent of any observable and distinguishable damage must be correctly reported.	1) view filmstrips/slides 2) read subject-matter units 3) group discussion of common greenhouse disease and insect problems 4) disease/insect I.D. quiz 5) complete Performance Objective	1) note 2) notes 3) participation 4) 90% correct on I.D. quiz 5) per Performance Guide and instructor approval	Selections from "Miscellaneous" resource list <u>California</u> "Insect Identification Learning Kit" <u>Georgia</u> "Recognizing Pests and Pesticides" <u>Ohio</u> "Some Common Types of Insects" Co-Operative Extension Service Office Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: PLANT PEST AND DISEASE CONTROL

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? REPORT DISEASE AND INSECT DAMAGE

PERFORMANCE GUIDE

1. Identify the area in which the floral plants are to be observed.
2. Observe the plants, distinguishing between damage caused by insects and that which appears to be the result of disease.
3. Report findings.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? . CUT FLOWERS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the appropriate containers and conveyance for hauling, a cut flower crop to be harvested and a cutting knife for harvesting, cut (harvest) the flowers. Flowers must be at late bud or early bloom stage of development, free from disease and physical damage, meeting market requirements.	1) Independent/group research of local industry practices 2) Independent/group research of specific crop cultural requirements 3) Complete Performance Objective	1) Notes/report findings 2) Notes/report findings 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Crop cultural requirements Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

CUT FLOWERS

PERFORMANCE GUIDE

1. Ascertain any special buyer requirements and grade specifications.
2. Identify the particular beds or field areas from which flowers are to be harvested.
3. Harvest (cut) the flowers in late bud or early bloom stage of development, meeting the market requirements.
4. Place flowers from the baskets or other containers in the truck or other vehicle provided.

UNIT: HARVESTING CROPS
WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

COUNT AND BUNCH FLOWERS

FLORICULTURE

PERFORMANCE
OBJECTIVE

Given the flowers, standards to be followed in counting and bunching and the necessary materials, count and bunch the flowers. The count must be 100 percent accurate, stems must be pointing in the same direction and of uniform length when placed in the bunch. Bunches will be firmly bound together by double or triple wrapping with a rubber band.

PERFORMANCE
GUIDE

(attached)

SUGGESTED
LEARNING ACTIVITIES

- 1) Read subject-matter units
- 2) Independent/group research of local industry practices
- 3) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Notes/report findings
- 3) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky

NP-68 'Packaging and Loading Orders'

New York

01.0599-08 'Preparing Flowers for Sale'

West Virginia

No. 10 'Sale Preparation'

Local Industry

Performance Guide

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? COUNT AND BUNCH FLOWERS

PERFORMANCE GUIDE

1. Become familiar with prescribed standards for counting and bunching before beginning the task.
2. Identify the flowers to be counted and bunched.
3. Count and bunch flowers according to the standards set.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? PREPARE AND PLACE CUT FLOWERS IN WATER OR PRESERVATIVE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the required solution, vats or other suitable containers, a pair of shears, flowers to be prepared and placed in water or other preservative solution, prepare the flowers and place them in the solution. Stems of the flowers will be freshly cut to a uniform length and the solution will cover not less than 1/3 or more than 1/2 the length of the flowers.	1) View filmstrips/slides 2) Read subject-matter units 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> FO-4 'Conditioning Cut Flowers' <u>Michigan</u> E-558 'Proper Care of Cut Flowers' <u>Ohio</u> 'Cut Flowers' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PREPARE AND PLACE CUT FLOWERS IN WATER OR PRESERVATIVE

PERFORMANCE GUIDE

1. Remove all unsuitable floral specimens and discard.
Caution: Diseased and malformed flowers are not to be placed in the preservative.
Also, some varieties should be counted and bunched prior to treatment.
2. Trim the stems so that all are freshly cut and approximately of the same length.
3. When properly trimmed and otherwise prepared, place flowers in the preservative which should be at or only slightly below room temperature.
Caution: Use dividers or racks to prevent flowers from falling down and becoming submerged in the perservative.
4. Clean up the work area and dispose of the culled or discarded flowers when the task is completed.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO? LOAD POTTED PLANTS FOR HAULING

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given potted plants for delivery and a truck or other suitable conveyance, load the plants for delivery. Plants must be closely packed and arranged according to size so that none will be damaged in hauling.	1) View filmstrips/slides 2) Read subject-matter units 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-68 'Packaging and Loading Orders' <u>Ohio</u> 'Flowering Potted Plants' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

LOAD POTTED PLANTS FOR HAULING

PERFORMANCE GUIDE

1. Identify all plants to be loaded and hauled.
2. Appraise the nature of the shipment - its size, shape and content - to determine the best plan for loading.
3. Load all plants that are packaged and crated at the front of the truck and as compactly as possible.
Caution: Make sure that no heavy wooden crates are placed on cardboard boxes or on smaller and more fragile wooden crates. Also, depending on the nature of the load, roads and distances to be traveled, rope should be used to secure the bulk of the shipment and to prevent it from shifting.
4. Place any large or single potted plants with foliage too large or extensive to crate in closely spaced boxes, open cartons or crates and secure them as necessary when the loaded plants do not occupy the total 'floor' space on the truck.
5. Close gates on loaded truck, making sure they are secure.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE SALEABLE PLANTS FROM BEDS OR BENCHES

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a collection of potted plants growing in greenhouse beds or benches containing both saleable and unsaleable plants, select those plants that are saleable and remove them from the beds or benches. All of the plants removed must be saleable and no more than 10 percent of the saleable plants on a given bench will be overlooked.	1) Read subject-matter units 2) Independent/group research of local industry practices 3) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>New York</u> 01.0599-08 'Preparing Flowers for Sale' <u>West Virginia</u> No. 10 'Sale Preparation' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE SALEABLE PLANTS FROM BEDS OR BENCHES

PERFORMANCE GUIDE

1. Review order and decide the standard for marketable plants of a particular species.
2. Collect the required number of saleable plants and remove them from the others.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? DIG BULBS OR CORMS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a field of bulbs or corms to be harvested, a mowing machine, tractor and bulb digger, top and dig bulbs or corms. All tops or above ground growth must be mowed and no more than 2 per cent of the bulbs or corms will be left in the field.	1) Independent/group research of local industry practices 2) Complete Performance Objective	1) Notes/report findings 2) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? DIG BULBS OR CORMS

PERFORMANCE GUIDE

1. Identify field to be harvested.
2. Service tractor and equipment.
3. Mow tops of bulbs or corms to be harvested.
Caution: Tops must be cut at ground level as nearly as possible and allowed to stand a week or 10 days to permit tops to decompose.
4. Use bulb digger to dig up bulbs or corms, observing all safety precautions.
5. Remove bulbs or corms and all equipment from field.
6. Clean and store equipment when job is completed.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? CLEAN AND SIZE HARVESTED BULBS AND CORMS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given 2 crates (5/8 bushel size) of bulbs or corms to be cleaned and sized (sorted and graded), specified standards, a supply of water, a water hose and a sizing table, clean and size the bulbs or corms. Excessive amounts of dirt, trash and debris must be removed and 95 percent or more of the bulbs or corms must be correctly sized by means of visual observation and separated into at least 3 categories based either on quality or size as determined by the instructor.	1) Read subject-matter unit 2) Independent/group research of local industry practices 3) Independent/group research of grading standards 4) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-63 'Grading Plants' Local Industry Performance Guide

PERFORMANCE GUIDE

(attached)

FLORICULTURE

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

CLEAN AND SIZE HARVESTED BULBS AND CORMS

PERFORMANCE GUIDE

1. Identify the bulbs or corms to be cleaned and graded.

2. Become familiar with the market requirements or other pre-determined standards that are to be adhered to in the cleaning and grading.

Caution: Since no recognized market or grading standards have been developed, it will be advisable for teachers to set up standards that will be used in the training program.

3. Clean and size the bulbs.

Caution: Normally bulbs or corms are not washed, but where soils are wet and/or heavy when bulbs or corms are harvested, washing with water is permissible when sizing the bulbs.

4. Clean all equipment following use and return to storage.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

DRY HARVESTED BULBS OR CORMS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given two bushels of harvested bulbs or corms in baskets or sacks, drying racks and other necessary items, place the bulbs or corms appropriately in racks and dry them. Bulbs or corms must be air dried sufficiently after harvesting to prevent them from acquiring mildew and rotting in storage. When adequately dried there will be no exterior moisture in evidence and interior moisture will have been sufficiently reduced to prevent rotting. PERFORMANCE GUIDE (attached)	1) Independent/group research of local industry practices 2) Complete Performance Objective	1) Notes/report findings 2) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Performance Guide

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? DRY HARVESTED BULBS OR CORMS

PERFORMANCE GUIDE

1. Determine which particular bulbs or corms are to be dried and arrange drying area and the racks provided.
2. Remove excessive soil from harvested bulbs or corms.
Caution: When soil is heavy and especially when bulbs or corms are harvested when the land is wet, it may be necessary to wash bulbs or corms with water before drying.
3. Place bulbs or corms in racks for drying.
Caution: Bulbs or corms must be spaced properly in racks and must not be piled on top of each other.
4. Air dry for a sufficient period of time.
Caution: Forded air may be used if weather conditions require.
5. Place bulbs or corms in storage following a 10 day drying period.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

TREAT BULBS OR CORMS TO CONTROL FUNGI OR OTHER DISEASE ORGANISMS

FLORICULTURE

Given the necessary applicators and/or containers, bulbs or corms to be treated, and a specially prepared fungicidal dip or powder, treat the bulbs or corms. If the specially prepared dip is to be used the bulbs or corms will be completely submerged in the solution and allowed to remain 10 seconds before being removed. If powder is to be used, a few bulbs or corms will be treated at a time to insure complete coverage. In either case spoilage losses will not exceed two percent.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) View filmstrips/slides
- 2) Read subject-matter units
- 3) Group discussion of diseases common to bulbs/corms and their treatments
- 4) Independent/group research of local industry practices
- 5) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Notes
- 3) Participation
- 4) Notes/report findings
- 5) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Illinois

No. 1108-1.1 'Understanding and Safe Use of Pesticides'

California

'How to Safely Use Sprays and Dusts on Plants'

Georgia

'Applying Pesticides'

Kentucky

GG-69 'Controlling Insects on Plants'

New York

01.0599-01 'Controlling Insects, Diseases, and Fertilization'

West Virginia

No. 9 'Disease and Pest Control'

Local Industry

Performance Guide

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

TREAT BULBS OR CORMS TO CONTROL FUNGI OR OTHER DISEASE ORGANISMS

PERFORMANCE GUIDE

1. Identify bulbs or corms to be treated.
2. Determine which method of treatment is to be used.
3. Treat the bulbs in accordance with recommended practices for the method of treatment which is to be used.

Caution: If the dust method is used it is especially important that only a few bulbs or corms are treated at one time. Dust can either be applied by hand or by means of a dusting gun, but the entire surface of the bulbs or corms should be treated. If the dip method is used, bulbs or corms must first be submerged in the dip and then drained and allowed to dry before being placed in storage.

4. Clean up utensils and restore all items to their appropriate place following treatment.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE BEDWIRE OR FIBERED PLASTIC FROM HARVESTED AREAS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given bedwire or fibered plastic in a greenhouse flower bed from which a crop has been harvested, remove the bedwire/fibered plastic prior to the planting of a new crop. All wire or string holding bedwire/fibered plastic must be rolled up into a compact roll and then removed from the bedding area without damage.	1) Independent/group research of local industry practices 2) Complete Performance Objective	1) Notes/report findings 2) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REMOVE BEDWIRE OR FIBERED PLASTIC FROM HARVESTED AREAS

PERFORMANCE GUIDE

1. Identify the bed from which bedwire/fibered plastic is to be removed.
2. Remove all weeds, grass and debris from bed.
3. Remove string or wire securing bedwire/fibered plastic to stakes.
4. Roll up bedwire/fibered plastic into a tightly compacted roll.
5. Store bedwire/fibered plastic properly for future use.

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? CUT, COUNT AND BUNCH FERN

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given fern to be harvested, quality specifications, a knife, and rubber bands, cut the fern, count it and bind it into bunches. Only high quality leaves are to be cut, 20 leaves will comprise each bunch and elastic bands will effectively used to bind the leaves comprising a bunch together. Also, a minimum of 30 bunches will be harvested per hour.	1) View filmstrips/slides 2) Read subject matter unit 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Ohio</u> 'Design Greens' <u>West Virginia</u> No. 10 'Sale Preparation' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: HARVESTING CROPS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? CUT, COUNT AND BUNCH FERN

PERFORMANCE GUIDE

1. Identify rows which are to be harvested.
2. Using blade of cutting knife and thumb, harvest only select fern of high quality, counting out the required number of fern leaves to be included in each bunch.
Caution: While an occasional bunch may be made up of one more or less than the required number this will be frowned on by growers and is sufficient cause for a cut in wages or even dismissal.
3. Bind each bunch with an elastic carried over one wrist when the correct number of leaves have been cut.
4. Stack bunches of fern at ends of rows for loading on trucks.

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INVENTORY PLANTS

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the necessary inventory sheets and assorted plants to be inventoried, inventory the plants according to their varieties, size, and container size. All plants must be listed and classified as to variety. The count will be verified by the instructor.	1) Read subject-matter units 2) Group discussion of importance of current inventory, frequency of taking inventory, etc. 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Participation 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Kentucky GG-73 'Purchasing & Transporting Plants Equipment, and Supplies' West Virginia No. 10 'Sale Preparation' Sample Inventory Sheet Local Industry Performance Guide

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

INVENTORY PLANTS

PERFORMANCE GUIDE

1. Prepare inventory sheet in advance and place it on a clip board so that it will be accessible for ready use.
2. Count and record actual number of plants in each category according to variety, quantity, container size, etc., proceeding systematically.
3. Total each category to obtain your final count.
4. Turn inventory over to your immediate supervisor/instructor when the inventory has been completed and checked.

INVENTORY SHEET FOR A FLORICULTURE OPERATION

Variety	Quantity	Container Size	Size & # of Plants per pots (if applicable)	Plant Condition

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

GRADE POTTED FLOWERS OR FOLIAGE PLANTS

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

Given 4 or 5 dozen potted foliage or floral plants to be graded, grade the plants. To meet requirements, at least 90 percent of the plants graded must conform to the grading standards adopted by Pi Alpha Xi, the National Honorary Fraternity in Floriculture and Ornamental Horticulture,

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
	1) Read subject-matter units 2) Study and be familiar with Pi Alpha Xi grading standards 3) Practice grading of plants 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Pass teacher-prepared quiz 3) Per Pi Alpha Xi grading standards and instructor approval 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> NP-63 'Grading Plants' <u>West Virginia</u> No. 10 'Sale Preparation' Pi Alpha Xi Grading Standards Local Industry Performance Guide

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

GRADE POTTED FLOWERS OR FOLIAGE PLANTS

PERFORMANCE GUIDE

1. Study the grades and standards for judging as contained in current or past publications of P1 Alpha X1 and other similar publications.
2. Establish a mental image for the perfect model or ideal plant.
3. Compare plants to be graded to the model.
4. Place or grade the plants in accordance with mental image of the ideal or model.

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

GRADE CUT FLOWERS

FLORICULTURE

PERFORMANCE GUIDE

(attached)

Given 100 carnations or other cut flowers grown for market, grade the flowers. At least 95 percent of the 100 flowers must be placed in their correct grade as identified by the Society of American Florists.

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
	1) View filmstrips/slides	1) Notes	Selections from 'Miscellaneous' resource list
	2) Read subject-matter units	2) Notes	Kentucky
	3) Study Society of American Florists Grading Standards	3) Pass teacher-prepared quiz	NP-63 'Grading Plants'
	4) Practice grading flowers	4) Per Society of American Florists Grading Standards and instructor approval	New York 01.0599-08 'Preparing Flowers for Sale'
	5) Independent/group research of local industry practices	5) Notes/report findings	Ohio 'Cut Flowers'
	6) Complete Performance Objective	6) Per Performance Guide and instructor approval	West Virginia No. 10 'Sale Preparation'
			Society of American Florists Grading Standards
			Local Industry
			Performance Guide

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

GRADE CUT FLOWERS

PERFORMANCE GUIDE

1. Identify flowers to be graded.
2. Study grade classifications for cut flowers and develop a mental image of the 'perfect' flower.
3. Grade the cut flowers based on the image of the 'perfect' flower and in accordance with the standards of the Society of American Florists as adopted by the Pi Alpha Xi.

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PLACE PLANTS (FLORAL AND FOLIAGE) IN STORAGE

FLORICULTURE

PERFORMANCE GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given storage facilities and plants to be placed in storage, prepare the plants for storage and store them. Preparatory to storage, plants must be stemmed and placed in a container holding water or toehr preservative solution so that standards of quality can be maintained. No plants are to be damaged in the process.	1) View filmstrips/slides 2) Read subject-matter units 3) Group discussion on various types of storage and their affect in plant life, senescence - refrigerator, hypobaric storage, etc. 4) Independent/group research of local industry practices 5) Complete Performance Guide	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> FD-4 'Conditioning Cut Flowers' <u>Michigan</u> E-558 'Proper Care of Cut Flowers' <u>New York</u> 01.0599-08 'Preparing Flowers for Sale' <u>West Virginia</u> No. 10 'Sales Preparation' Local Industry Performance Guide

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PLACE PLANTS (FLORAL AND FOLIAGE) IN STORAGE

PERFORMANCE GUIDE

1. Identify the kinds of plants that are to be stored.
2. Prepare plants for storage according to their particular needs.
3. Place plants in storage.

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PREPARE INVOICES AND SHIPPING LABELS

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given three blank invoices and labels for shippings and all necessary data, complete the invoices and labels. The invoices and albel's will be completed without error and extensions and totals will be verified by the instructor.	1) Read subject-matter units 2) Independent/group research of local industry practices 3) Group discussion of information needed on invoices and shipping labels 4) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Participation 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Kentucky NP-68 'Packaging and Loading Orders' Sample Invoice Sample Shipping Label Local Industry Performance Guide

PERFORMANCE
GUIDE

(attached)

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PREPARE INVOICES AND SHIPPING LABELS

PERFORMANCE GUIDE

1. On the invoice indicate the receiver and buyer.
2. Check to determine presence of packer's signature.
3. Note the method of shipment.
4. Indicate quantity shipped and plant description and extend unit price and total.
5. Add sales tax, if applicable..
6. Verify shipment against quantity ordered.
7. Total prices.
8. Complete shipping labels indicating receiver, sender, purchase order number and invoice number

SAMPLE INVOICE

Co. Certification No. N11111

Ace Nursery & Supply
Last Stop, Florida -----

Ship to:	Sold to:

Packed by: _____ Shipped Via: _____

Quant. Ord.	Quant. Shipped	Description	Unit	Stock No.	Unit Price	Total Price

This space for State Department of
Agriculture Inspector's SealThis space for USDA Inspector's
Seal

SAMPLE SHIPPING LABEL

Ship to: _____ From: _____

Address: _____

Customer Order Number: _____

Invoice Number: _____

* May be posted or stapled on to shipping container

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PACKAGE ORDERS FOR SHIPMENT

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

Given the necessary boxes, wrapping materials, potted plants and/or cut flowers to fill an order, package the same for shipment. To meet requirements, all items included on the accompanying instructor's check list must be rated acceptable.

SUGGESTED LEARNING ACTIVITIES

- 1) Read subject-matter units
- 2) Independent/group research of local industry practices
- 3) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Notes/report findings
- 3) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky
NP-68 'Packaging and Loading Orders'

Local Industry

Performance Guide

Instructor Checklist

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

PACKAGE ORDERS FOR SHIPMENT

PERFORMANCE GUIDE

1. Review the packaging and shipping procedures for the particular order being filled.
2. Package the plants in accordance with the requirements for safe shipment for the kind of plants being shipped.
 - a. Make certain plants are in good condition when packed.
 - b. Pack flowers firmly to prevent movement in shipping.
 - c. Provide insulation for temperature control and to prevent the plants from becoming too dry. Waxed paper, boxes or plastic wrapper, and excelsior should be available for achieving those purposes.
3. Include the necessary invoices and shipping labels.
4. Clean up the work area after completion of task.

INSTRUCTOR'S CHECK LIST:

ACTIVITY	Rating*	
	ACCEPTABLE	UNACCEPTABLE
1. Shipping instructions were reviewed before proceeding to package the order.		
2. The appropriate size box was used to package the order.		
3. Plants were wrapped in accordance with the requirements for the kinds and quantities of flowers being shipped.		
4. Newspaper, excelsior or other filler was used judiciously in packaging the order and as required for assuring arrival of shipment without damages and in good condition.		
5. Invoice and shipping labels were included with the order.		

* All activities should be performed acceptably.

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

ASSEMBLE SHIPPING CARTONS

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given unassembled shipping cartons, tape, stapling gun and other essential materials and equipment, assemble the shipping cartons. Instructor will designate rate of assembly and cartons must be symmetrical and sufficiently strong to sustain and protect the floral plants which are to be shipped in them.	1) Read and be familiar with Manufacturer's instructions (usually printed on side of unassembled box) 2) Group discussion on various types of plant shipping containers - cardboard, styro-foam, etc. 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Participation 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Manufacturer's Instruction Local Industry Performance Guide

UNIT: PACKAGING, STORAGE AND SHIPMENT

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

ASSEMBLE SHIPPING CARTONS

PERFORMANCE GUIDE

1. Arrange all necessary equipment and materials for convenience in using the work area.
2. Assemble each carton after unfolding, stapling and taping.
3. Check each carton to insure proper assembly.
4. Stack cartons in proper storage area.
5. Return all unused materials to storage when task is completed.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

CLEAN SPRAY EQUIPMENT AFTER USE (NOZZLE, TANKS, HOSES, ETC.)

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given spray equipment to be cleaned, suitable detergent, an air hose, water and a dry cloth, clean all parts of the spray equipment including hoses, tank, nozzles and filters. Spray equipment when cleaned will be free of all trash, sediment, corrosive acids and alkali residues. Corrosive-prone parts will be coated with a film of oil.	1) View filmstrips/slides 2) Review Manufacturers' Instructions for chemical(s) used and spray equipment 3) Group discussion on importance of cleaning spray equipment, methods of cleaning, etc. 4) Independent/group research on local industry practices 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Georgia 'Operating Sprayers' 'Type and Size of Sprayers to Use' Manufacturers' Instructions Local Industry Performance Guide
PERFORMANCE GUIDE (attached)			

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

CLEAN SPRAY EQUIPMENT AFTER USE (NOZZLE, TANKS, HOSES, ETC.)

PERFORMANCE GUIDE

1. Make sure all necessary materials are available.
 2. Flush clean water through unit to reduce concentration of chemical.
 3. Flush again using trisodium phosphate (1 pound for 25 gallons of water).
 4. Disassemble nozzles and filters and wash entire unit thoroughly to remove all chemical and dirt.
 5. Dry each part thoroughly and coat with oil.
 6. Reassemble spray equipment and store in dry place.
- Caution: Where spray equipment is used infrequently, nozzles and accessory parts should be kept in a small can or bottle containing diesel fuel. This should guarantee that they will function effectively at the time of use.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPAIR LINES AND NOZZLES ON SPRAY EQUIPMENT

FLORICULTURE

PERFORMANCE OBJECTIVE

Given a piece of spray equipment with nonfunctional hoses, pipes, lines, and/or nozzles, the necessary tools and replacement parts, repair the equipment. The spray equipment when the malfunctioning parts have been replaced or repaired, will function efficiently and effectively.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) View filmstrips/slides
- 2) Read subject-matter units
- 3) Review Manufacturer's Instructions
- 4) Independent/group research of local industry practices
- 5) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Notes
- 3) Notes
- 4) Notes/report findings
- 5) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Georgia
'Operating Sprayers'

New York
OI.0599-06 'Operation and Maintenance of Horticultural Equipment'

Manufacturer's Instructional

Local Industry

Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

REPAIR LINES AND NOZZLES ON SPRAY EQUIPMENT

PERFORMANCE GUIDE

1. Assess damage to spray equipment.
2. Remove damaged or non-functional hoses, pipes, or nozzles.
 - a. Splice or replace ruptured hoses.
 - b. Straighten, couple or replace damaged pipes.
 - c. Clean or replace clogged or damaged spray nozzles.
3. Operate spray equipment to make sure it is operational and especially, that it emits a uniform spray when repairs have been made.
4. Clean and return unused or salvageable materials or parts to storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO? MAKE MINOR ELECTRICAL REPAIRS AND REPLACE SEALS ON IRRIGATION SUPPLY PUMP

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a malfunctioning electrically powered irrigation supply pump needing minor repairs, make the necessary minor repairs. Any repairs must be made in accordance with standards set forth in the operator's manual and to the satisfaction of the instructor.	1) Read subject-matter units 2) Review Manufacturer's instructions and repair manual 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Kentucky</u> GG-47 'Servicing Irrigation Systems' NP-75 'Cleaning and Oiling Electric Motors' Manufacturer's Instructions Local Industry Performance Guide

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

MAKE MINOR ELECTRICAL REPAIRS AND REPLACE SEALS ON IRRIGATION SUPPLY PUMP

PERFORMANCE GUIDE

1. Use meter or test lamp to check electrical system and identify problems.
 - a. attach meter or lamp to wiring to observe presence or absence of electricity.
 - b. wiring for damage such as breaking and short circuits.
 - c. observe fuses or ground current interrupters for burn-out or tripping.
2. Inspect pump for leaking seals.
 - a. inspect intake seals for air leakage.
 - b. inspect impeller shaft and casing for water or air leakage.
 - d. inspect output seals for water leakage.
3. Repair or replace electricity.
 - a. replace wiring completely or splice and insulate broken or disconnected wiring.
 - b. replace fuses or reset ground current interrupter.
4. Replace leaking seals.
 - a. disassemble points of leakage.
 - b. remove old seals.
 - c. clean seal seats.
 - d. position new seals.
 - e. reassemble pump.
5. Operate pump and inspect for problems.
6. Return tools and equipment to storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPAIR BROKEN PIPES, SPRINKLER HEADS, MIST HEADS, VALVES, AND GASKETS

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

Given a malfunctioning sprinkler or mist irrigation system, the necessary tools, equipment, and repair parts, check out the system repairing or replacing any broken pipes, sprinkler heads, mist heads, valves and/or gaskets needing to be repaired or replaced. There are to be no leaks, clogged heads or faulty gaskets or valves in the system when the task is finished.

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
	1) Read subject-matter units	1) Notes	Selections from 'Miscellaneous' resource list <u>Kentucky</u> GG-47 'Servicing Irrigation Systems' NP-21 'Repairing Leaky Water Pipes' <u>Texas</u> 'Greenhouse Operation and Management' Manufacturer's Instructions Local Industry Performance Guide
	2) Review Manufacturer's Instructions and repair manual	2) Notes	
	3) Group discussion of various types of pipe materials, sprinkler heads, mist heads, valves and their maintenance	3) Participation	
	4) Independent/group research of local industry practices	4) Notes/report findings	
	5) Complete Performance Objective	5) Per Performance Guide and instructor approval	

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPAIR BROKEN PIPES, SPRINKLER HEADS, MIST HEADS, VALVES AND GASKETS

PERFORMANCE GUIDE

1. Operate the system to identify malfunctions.
2. Check to make sure all parts, materials and tools are available.
3. Clean any clogged sprinkler or mist heads by routing them out with a welder's tip cleaner or wire.
4. Replace damaged pipes, valves, sprinkler heads, mist heads or faulty gaskets.
5. Operate the system to make sure all necessary repairs and adjustments have been made.
6. Clean all tools and equipment and return them to storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

LOCATE AND REPORT ANY MALFUNCTIONS OF FERTILIZER INJECTION SYSTEM

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a malfunctioning system for injecting liquid fertilizer into an automatic irrigation system, liquid fertilizer, dye and any other necessary devices locate and report the malfunctions. All malfunctions must be located and reported.	1) Read subject-matter units 2) Review Manufacturer's Instructions and repair manual 3) Group discussion of common malfunctions in fertilizer injection systems, repair techniques, etc. 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Notes 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Kentucky + GG-10 'Cleaning and Lubricating Fertilizer Applicators' Manufacturer's Instructions Local Industry Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

LOCATE AND REPORT ANY MALFUNCTIONS OF FERTILIZER INJECTION SYSTEM

PERFORMANCE GUIDE

1. Confirm location of system.
2. Locate the malfunction.
 - a. apply a suitable dye to the water in the injection tank
 - b. take water samples in a clear glass bottle and compare the samples with the water in the injection tank. When the color of water from the injector system varies appreciably from the injector water (lighter in color) the system is clogged at some point.
 - c. several checks of the water in the system should pinpoint the problem.
3. Report the malfunction and its location to immediate supervisor or instructor.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

GREASE EQUIPMENT

FLORICULTURE

PERFORMANCE GUIDE

(attached)

Given the necessary grease guns or grease, one or more tractors or other pieces of equipment requiring lubrication, and after reading the appropriate operator's manual, grease the equipment. No part of any equipment which the operator's manual indicates is to be greased should be overlooked and any zirk fittings which do not take grease properly must be removed and cleaned or replaced with new ones.

- SUGGESTED
LEARNING ACTIVITIES**
- 1) Read subject-matter units
 - 2) Review Manufacturer's Instructions
 - 3) Group discussion on how to grease equipment properly, where to grease, frequency of greasing, etc.
 - 4) Independent/group research of local industry practices
 - 5) Complete Performance Objective

- EVALUATION**
- 1) Notes
 - 2) Notes
 - 3) Participation
 - 4) Notes/report findings
 - 5) Per Performance Guide and instructor approval

- REFERENCES**
- Selections from 'Miscellaneous' resource list
- Kentucky
GG-10 'Cleaning and Lubricating Fertilizer Applicators'
NP-75 'Cleaning and Oiling Electric Motors'
- New York
01.0599-06 'Operation and Maintenance of Horticultural Equipment'
- Manufacturer's Instruction
- Local Industry
- Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

GREASE EQUIPMENT

PERFORMANCE GUIDE

1. Check manual for location of zirks and places to be greased.
2. Locate fittings and wipe off with cloth.
3. Apply correct type grease to each zirk or other place to be greased.
4. Oil any area which manual specified is to be oiled.
5. Wipe off extra oil and grease with cloth.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

OIL ELECTRIC MOTORS

FLORICULTURE

PERFORMANCE OBJECTIVE

Given an electric motor, an operator's manual, a suitable applicator, the required oil, a clean cloth and any other tools or equipment which might be needed, oil the motor in accordance with the specifications included in the operator's manual.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) Read subject-matter units
- 2) Review Manufacturer's Instructions and maintenance recommendations
- 3) Group discussion on proper oiling of electric motors, frequency of lubrication, etc.
- 4) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Notes
- 3) Participation
- 4) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky
NP-75 'Cleaning and Oiling Electric Motors'

New York
01.0599-06 'Operation and Maintenance of Horticultural Equipment'

Manufacturer's Instruction

Local Industry

Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

OIL ELECTRIC MOTORS

PERFORMANCE GUIDE

1. Check operator's manual to identify all cups and other receptacles requiring oil.
2. Apply oil to the appropriate areas of motor.
3. Use cloth to remove excess oil.
4. Return oil and other required items to storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

SHARPEN HAND TOOLS

FLORICULTURE

PERFORMANCE OBJECTIVE

Given from 4-6 hand tools including a knife, hoe, spade and/or pruning shears, and a work bench with a vise and the necessary files, emery wheels, whetstones or other required equipment, sharpen the assigned hand tools. Tools must be sharpened to a keen cutting edge and in such a way that the life and utility of the tools are not impaired.

PERFORMANCE GUIDE

(attached)

SUGGESTED LEARNING ACTIVITIES

- 1) Read subject-matter units
- 2) Group discussion on methods of sharpening hand tools, safety precautions, etc.
- 3) Complete Performance Objective

EVALUATION

- 1) Notes
- 2) Participation
- 3) Per Performance Guide and instructor approval

REFERENCES

Selections from 'Miscellaneous' resource list

Kentucky

GG-27 'Servicing Hand Tools'

New York

01.0599-06 'Operation and Maintenance of Horticultural Equipment'

Local Industry

Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

SHARPEN HAND TOOLS

PERFORMANCE GUIDE

1. Select the appropriate pieces of equipment for sharpening a given tool.
2. Practice all necessary safety precautions.
3. Sharpen tools to achieve proper blade sharpness and angle edge of the blade.
4. Clean all tools and equipment used in the sharpening process and return them to their proper place in storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPAIR WOODEN GREENHOUSE BENCHES AND SUPERSTRUCTURE

FLORICULTURE

PERFORMANCE
GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a greenhouse superstructure and a series of benches with wooden portions requiring repair or replacement, the necessary tools and materials, make the repairs. Repairs must be of sturdy construction, restore the benches to utility and all items in the instructor's check list must be rated satisfactory.	1) Read subject-matter units 2) Review construction manuals 3) Independent/group research of local industry practices 4) Complete Performance Objective	1) Notes 2) Notes 3) Notes/report findings 4) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 3009a 'Using the Carpenter's Square' <u>Texas</u> 'Greenhouse Operation and Management' Construction Manuals Local Industry Performance Guide Instructor Checklist

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

REPAIR WOODEN GREENHOUSE BENCHES AND SUPERSTRUCTURE

PERFORMANCE GUIDE

1. Identify the repairs needed.
2. Determine the nature and extent of the repairs needed.
3. Superstructure
 - a. Brace superstructure prior to removing wooden portions.
 - b. Remove any broken, rotten, misshapen, or worn portions.
 - c. Measure and fit replacement part.
 - d. Remove braces from superstructure.
4. Greenhouses Benches
 - a. Remove plants and media from the benches to be repaired.
 - b. Square off and mark the area to be repaired.
 - c. Remove damaged portion of bench.
 - d. Measure and fit new portion to bench. Replacement portion should be made of treated wood.
5. Clean area and return all tools and unused materials to storage.

INSTRUCTOR'S CHECK LIST:

ACTIVITY	Rating*	
	ACCEPTABLE	UNACCEPTABLE
1. Lumber and other materials available for making the repairs was properly utilized.		
2. Measurements were carefully taken before any materials were procured and cut.		
3. All materials procured were of proper size, type and dimensions.		
4. All other work done was completed in the time allotted and met requirements for quality and durability.		
5. Necessary safety precautions were followed at all times in making the repairs.		
6. Tools, equipment and left over materials were properly cleaned and stored following use.		

* All activities should be performed acceptably.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PREPARE AND PAINT GREENHOUSE FRAMES AND EQUIPMENT

FLORICULTURE

PERFORMANCE GUIDE

(attached)

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given paint, paint brush, spray gun, wire brush, sandpaper, thinning agent, greenhouse frames, benches or other equipment to be painted, paint the items so that they are both attractive and protected against rusting, corrosion, and rotting.	1) Read subject-matter units 2) Group discussion of paint types/colors and their uses on various equipment - heat pipes, frames, etc. 3) Group discussion of OSHA safety color codes 4) Independent/group research of local industry practices 5) Complete Performance Objective	1) Notes 2) Participation 3) Participation 4) Notes/report findings 5) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 3015 'Spray Painting' No. 3044 'A Color Code for Shop Safety' <u>Kentucky</u> NP-19 'Painting Greenhouse or Nursery Structures' Manufacturer's Instruction OSHA Safety Color Codes Local Industry Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

PREPARE AND PAINT GREENHOUSE FRAMES AND EQUIPMENT

PERFORMANCE GUIDE

1. Identify items which are to be painted.
2. Prepare items to be painted by use of steel wool, wire brush or other suitable abrasive to remove loose paint, rust and corrosion.
3. Determine type and color of paint to be used on items being painted.
4. Mix paint according to color chart if mixing is required to get desired color.
5. Add thinner or thinning agent if required and stir thoroughly.
6. Apply paint with spray gun or other suitable applicator.
7. Clean all applicators and other equipment following use.
8. Dispose of empty containers and trash properly.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

REPLACE AND GLAZE BROKEN GREENHOUSE GLASS

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given a greenhouse with broken glass, replacement glass, glazing compound and all necessary tools, replace broken glass and apply glazing compound to form a waterproof seal. New glass must be firmly fitted, well secured and glazing must be applied in a manner that prevents leakage.	1) Read subject-matter units 2) Independent/group research of local industry practices 3) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 3039 'Glazing' <u>Kentucky</u> NP-18 'Glazing Windows' Local Industry Performance Guide

FLORICULTURE

PERFORMANCE GUIDE

(attached)

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPLACE AND GLAZE BROKEN GREENHOUSE GLASS

PERFORMANCE GUIDE

1. Locate broken glass.
2. Place ladder in position on roof and remove bar cap.
3. Remove broken glass.
4. Remove old putty from roof bar.
5. Apply glazing compound to bar.
6. Position new glass properly and firm down in putty.
7. Replace bar cap, if any.
8. Return all equipment to proper storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPLACE PLASTIC COVERING ON GREENHOUSE STRUCTURES

FLORICULTURE	PERFORMANCE GUIDE (attached)	PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
		Given a greenhouse with torn or damaged plastic covering, the plastic required for replacement and the necessary tools and equipment, replace the plastic covering. The new plastic must be installed in such a way that it is well aligned, firmly secured, presents a neat appearance, and restricts the entry of air, wind and water.	1) View filmstrips/ slides 2) Read subject-matter units 3) Review manufacturer's instructions 4) Visit local greenhouse for demonstration on recovering a plastic greenhouse. 5) Group discussion of various plastic coverings, affect of ultra-violet rays on plastic, frequency of changing plastic, etc. 6) Complete Performance Objective	1) Notes 2) Notes 3) Notes 4) Participation 5) Participation 6) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list <u>Illinois</u> No. 680 'Greenhouses - Uses and Design' <u>Ohio</u> 'Greenhouses and Related Structures' <u>Texas</u> 'Greenhouse Operation and Management' Manufacturer's Instruction Local Industry Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT
FLORICULTURE EMPLOYEE DO?

REPLACE PLASTIC COVERING ON GREENHOUSE STRUCTURES

PERFORMANCE GUIDE

1. Identify greenhouse area or sections in which plastic is to be replaced.
2. Remove torn or worn plastic and dispose of appropriately.
3. Remove old staples, nails, etc., and smooth any rough or splintered wooden edges.
4. Cut new plastic to fit.
5. Install new plastic.
6. Return tools and left over materials to storage.

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

REPLACE DAMAGED SUPPORT WIRES AND SECTIONS OF SARAN

FLORICULTURE

PERFORMANCE OBJECTIVE	SUGGESTED LEARNING ACTIVITIES	EVALUATION	REFERENCES
Given the necessary tools and materials and a greenhouse where support wires or sections of the saran are missing or damaged and need to be replaced replace the support wires and damaged sections of saran. Support wires must be securely fastened to the framework of the greenhouse, spaced 24 inches apart and tight enough to provide the necessary support without damaging the superstructure. The damaged sections of saran must be replaced in such a way that they are attractive in appearance, and will not tear loose from the greenhouse superstructure. PERFORMANCE GUIDE (attached)	1) Review Manufacturer's Instructions and repair recommendations. 2) Independent/group research of local industry practices 3) Complete Performance Objective	1) Notes 2) Notes/report findings 3) Per Performance Guide and instructor approval	Selections from 'Miscellaneous' resource list Manufacturer's Instructions Local Industry Performance Guide

UNIT: MAINTENANCE AND REPAIRS

WHAT DOES THE COMPETENT FLORICULTURE EMPLOYEE DO?

REPLACE DAMAGED SUPPORT WIRES AND SECTIONS OF SARAN

PERFORMANCE GUIDE

1. Support Wires
 - a. Examine the designated greenhouse area to determine the length and number of wires requiring replacement.
 - b. Measure and cut wire for replacement.
 - c. Secure one end of each wire to be used as a replacement to the framework of the greenhouse.
 - d. Stretch each wire to desired tightness and secure it.
2. Saran
 - a. Measure sections of damaged saran and cut the necessary peices of saran to replace the worn or damaged area.
 - b. Stretch saran to allow for expansion and tack in place.
 - c. Secure saran by use of an overlay of lath or other materials to prevent tearing.
3. Clean tools and return them along with any unused materials to storage when the task has been completed.

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MASTER REFERENCE
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2. Ball, George J. The Ball Red Book. West Chicago, Illinois: George J. Ball, Inc., 1975.
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4. Hartman, Hudson T. and Kester, Dale E. Plant Propagation: Principles and Practices. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1968.
5. Israelson, O.W. and Hansen, V.E. Irrigation Principles and Practices. New York: New York: Wiley, 1962.
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7. Mastalerz, J.W. Bedding Plants: A Manual on the Culture of Bedding Plants as a Greenhouse Crop. University Park, Pennsylvania: Pennsylvania Flower Growers, 1976.
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11. Nelson, Paul V. Greenhouse Operation and Management. Reston, Virginia: Reston Publishing Company, Inc., 1978.
12. Thomson, William Thomas. The Ornamental Pesticide Application Guide. Davis, California: Thomson Publications, 1969.

Slide Sets:

1. Horst, R.K_ and Schmohe, Daniel. "Identification of Greenhouse Diseases and Their Control." Ithaca, New York: Instructional Materials Service, Cornell University, 1975.

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California Polytechnic State University
San Luis Obispo, California 93407

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"Growing Media For Ornamental Plants"
"Plant identification: Annuals, Perennials, House Plants"
"Propagating Ornamental Plants"

Career Aids, Inc.
8950 Lurline Avenue, Dept. T-4
Chatsworth, California 91311

Soiltesting and Plant Propagation

"How to Collect and Test Soil Samples"
"How to Root Plant Cuttings"
"How to Perform Germination and Viability Tests on Seeds"
"How to Safely Use Sprays and Dusts on Plants"
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Greenhouse Skills

"How to Plant Seedlings"
"How to Transplant Seedlings into Flats"
"How to Transplant Seedlings from Flats to Pots"
"How to Water Greenhouse Plants"
"How to Fertilize Greenhouse Plants"

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Georgia

The University of Georgia
Department of Agricultural Education
630 Aderhold Hall
Athens, GA 30602

"Controlling Insects of Greenhouse Plants"

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Athens, Georgia 30602

"Applying Pesticides"

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434 Mumford Hall
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No.

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1108-1.1	"Understanding and Safe Use of Pesticides"
1108-1.2	"Selecting and Handling Pesticides"
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1108-2.2	"Identifying Common Insect Pests"
708	"Soil Color"
791a	"Weed Identification"
791a (supp)	"Practice Set Weed Identification"
800	"Identification of Weed Seedlings-Broadleaves, Part I"
801	"Identification of Weed Seedlings-Broadleaves, Part II"
803	"Identification of Weed Seedlings-Grasses"
811	"The Wicked World of Weeds"
600	"Propagation by Air Layering"
601	"Garden Flowers-Annuals, Part I"
601 (supp)	"Practice Set for Garden Flowers"
602	"Garden Flowers-Annuals, Part II"
602 (supp)	"Practice Set for Garden Flowers, Part II"
604	"Diseases of Garden Flowers"
613	"Planting and Caring of Hanging Baskets"
680	"Greenhouses-Uses and Design"
610	"Foliage Plant Identification-Part I"
610 (supp)	"Practice Set for Foliage Plant Identification-Part I"
611	"Foliage Plant Identification-Part II"
611 (supp)	"Practice Set for Foliage Plant Identification-Part II"
612	"Foliage Plant Identification-Part III"
612 (supp)	"Practice Set for Foliage Plant Identification-Part III"

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Subject-Matter Units:

<u>No.</u>	
4045a	"Handling and using Pesticides safely"
4001	"Collecting and Preparing Soil samples for Testing"
4002a	"PH Test for Soil Acidity"
4003b	" Testing Soils for Phosphorus"
4004b	"Determining Available Potassium in Soils"
4005	"Nature of Soil Acidity and Major Plant Nutrients"
4008a	"Recommended Potassium Fertilizers"

<u>No.</u>	
4010a	"Planning a Fertilizer Program:
4011a	"Hunger Signs in Crops"
4028	"Soil Structure"
4029	"Soil Color"
4030	"Soil Texture"
4052	"Understanding Soils"
5006	"Producing Plants by Asexual Propagation"
5007	"Growing Plants Indoors"
5010a	"Growing Flowering Annuals"
5011	"Pointsettias - Care and Propagation"
5013	"Producing Pointsettias Commercially"
5014	"Growing Lilies"
5019	"Care of Flowering Pot Plants in The Home"

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Competency Based Vocational Education Unit
2008 Capital Plaza Tower
Frankfort, KY 40601

MODULES:

<u>NO.</u>	<u>TITLE</u>
GG-1	Taking Soil Samples
GG-2	Developing Fertilization Schedules
GG-6	Sterilizing Soil
GG-9	Applying Fertilizer
GG-10	Cleaning and Lubricating Fertilizer Applicators
GG-47	Servicing Irrigation Systems
GG-48	Repairing Faucets
GG-51	Watering Plants
GG-68	Purchasing and Storing Chemical Supplies
GG-69	Controlling Insects on Plants
GG-71	Applying Weed Killing Compounds
GG-72	Applying Chemicals to Diseased Plants
GG-73	Purchasing and Transporting Plants, Equipment, and Supplies
FD-4	Conditioning Cut Flowers
FD-5	Watering Potted Plants
FD-6	Fertilizing Plants
FD-35	Dressing Potted Plants
NP-4	Treating Soil with Soil Fumigants
NP-5	Sterilizing Soil with Liquids and Chemicals
NP-6	Planting Bulbs
NP-7	Planting Seed
NP-8	Transplanting Seedlings to Pots
NP-10	Taking Cuttings (Softwood and Evergreen Wood)
NP-15	Labeling Planted Specimens
NP-18	Glazing Windows
NP-19	Painting Greenhouse or Nursery Structures
NP-20	Repairing Faucets
NP-21	Repairing Leaky Water Pipes
NP-22	Installing Irrigation Equipment
NP-23	Watering Plants
NP-25	Fertilizing Container Plants
NP-27	Setting and Adjusting Thermostats
NP-28	Forcing Potted Plants to Bloom at Seasonal Times
NP-30	Controlling Light Requirements by Shade Cloth
NP-31	Controlling Growth Rate by Applying Retardant
NP-48	Fumigating a Greenhouse
NP-49	Cultivating Nursery Crops
NP-52	Mixing Chemicals
NP-53	Controlling Insects on Plants

<u>NO.</u>	<u>TITLE</u>
NP-55	Applying Weed Killer
NP-56	Applying Chemicals to Diseased Plants
NP-58	Controlling Animal Pests
NP-59	Removing Diseased Plants
NP-63	Grading Plants
NP-66	Removing Dead and Diseased Blooms and Plant Parts
NP-68	Packaging and Loading Orders
NP-73	Replacing Electrical Light Switches
NP-74	Repairing Extension Cords
NP-75	Cleaning and Oiling Electric Motors
NP-76	Replacing a Greenhouse Fan
NP-77	Servicing Gas Heater Burners

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East Lansing, Michigan

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The University of The State of New York
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Albany, New York 12234

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<u>Modules</u>	<u>Code</u>
Introduction to Growing Greenhouse Crops	01.0503-01
Growing Bedding Plants	01.0503-02
Growing Specialized Greenhouse Holiday Crops	01.0503-03
Asexual Plant Propagation	01.0505-02
Plant Propagation from Seed	01.0505-03
Controlling Insects, Diseases, and Fertilization	01.0599-01
Preparing and Maintaining Ornamental Horticulture Soils	01.0599-02
Scheduling Greenhouse Crop Production	01.0599-07
Preparing Flowers for Sale	01.0599-08

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The Ohio State University
Room 254, 2120 Fyffe Road
Columbus, Ohio 43210

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"Annuals"
"Cut Flowers"
"Design Greens:"
"Flowering Potted Plants"
"Soil and It's Properties"

Manuals"

"Some Common Types of Insects"
"Need Control, Cultural and Chemical"
"The Greenhouse Worker"

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F.E. Box 182
Texas A&M University
College Station, Texas 77843

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"Greenhouse Operation and Management"
"Propagating Horticulture Plants"

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West Virginia

Vocational Curriculum Laboratory
Cedar Lakes Conferences Center
Ripley, West Virginia 25271

<u>Module</u>	<u>No.</u>
Soil Preparation	02
Seeds	03
Rooting and Propagation	04
Container Plants	05
Transplanting	06
Fertilizer	07
Greenhouse Control	08
Disease and Pest Control	09
Seed Preparation	10
Special Duties	11

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Madison, Wisconsin

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